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THE EARLY DIAGNOSIS OF CANCER

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An Address delivered before the Public Health Nurses' Association, Toronto.

PROBABLY the most striking fact in the etiology of malignancy is its frequent development upon a source of chronic irritation. A part of the body which is constantly exposed to an irritant, whether it be from outside the body affecting the skin, as is seen in the development of malignancy in those who are constantly exposed to irritating chemicals, or such substances as tar, soot or, on the other hand, from irritation within the body itself, such as the irritation of a jagged tooth against the tongue or cheek is very apt to become cancerous.

This question of chronic irritation is most interesting as well as most important as a means of prophylaxis. Thus the site of the cancer in the body varies considerably in different countries depending on certain habits and customs of the country. The best known example of this is the so-called "Kangri Cancer," or an epithelioma of the skin of the anterior abdominal wall. It is a common form of cancer among the natives of Kashmir, India, who are in the habit of protecting themselves against the extreme cold experienced among the hills by wearing suspended from the waist a Kangri—that is, a small earthenware vessel containing a charcoal fire. The constant wearing of these sets up an irritation of the skin which often results in epithelioma of the skin.

Another condition relatively more common in India is the occurrence of cancer of the lip, tongue and cheek and buccal mucous membrane, due to the chronic irritation set up by the chewing of betel nuts. This is analogous to the smoker's cancer of our own country. These points will serve as example to illustrate the important part irritation plays in the development of cancer. Hence any education of the laity as to the prevention of cancer must impress upon them the necessity of avoiding all sources of chronic irritations.

Before discussing in detail the early clinical signs of cancer, it will lead to a clearer understanding if briefly we consider the tissue changes which occur with development of malignancy. A malignant growth is one in which the various cells cease to be governed by the proper physiological rules of growth, but instead become, as it were, free from all control and run wild. They rapidly increase in number, grow into parts where they should not normally be, and become irregular in size and shape. They have not the resistance of the normal cell and therefore readily ulcerate. The body as a rule tries to get rid of this irritating mass of cells, quite foreign to it, by endeavoring to wall it off by forming fibrous walls about it. This is the reason that so many forms of cancer show themselves as hard nodules or lumps.

A lump arising any place in the body should at once arouse suspicion. It is an index that some irritating substance is present which the body is trying to ward

off and get rid of. But these cancerous masses do not always stay in the neighborhood of their origin. Cancer cells are carried by the lymphatics to the lymph glands adjacent. There the cells may start to grow and form further cancerous masses, which we call metastases. One can readily see that a mass of cells growing in the way described will press on the neighboring nerves and thus produce pain, or it may ulcerate and bleed, or it may press on blood vessels and cut off the circulation from other parts, the arm or leg for example.

Unless the disease can be eradicated by one of the several measures at our disposal death eventually results, as a rule through a slow exhaustion of the patient's strength, by the pain, bleeding or other distressing symptoms.

Cancer like inordinate self-esteem grows on itself, in the one case destroying the physical life, in the other the spiritual life of the individual.

Taken early enough this disease offers several means of cure. From a public health point of view the problem is to educate the public sufficiently that they will not allow through ignorance a malignant condition to develop until it is so far advanced that cure is out of the question, and only palliative measures can be considered. In almost all cases there are underlying conditions, which are spoken of as pre-cancerous, because so often a malignant growth develops upon them. These pre-cancerous conditions are not in themselves malignant, and as a rule can be readily cured.

The tendency to procrastinate with what the patient suspects to be serious is only too common. In a recent observation on this point a study was made of sixty-five cancer patients who presented themselves. Thirty-five of these were men and thirty were women. Study showed that after the first discovery of suspicious symptoms the men had waited an average of 12.2 months before consulting a physician, and the women had waited on an average of 11.9 months. Practically a year's delay in all cases.

Another observer examined the records of 1,062 cases, and showed that 87 per cent. of these patients could and should have applied for treatment much earlier, when the chances of recovery would have been much greater.

Let us then take up in order the chief organs that are affected by malignant disease and therefrom see how to prevent its development.

Cancer of the Uterus.

It is much commoner in women who have borne children. A certain amount of injury or trumatism, particularly of the cervix uteri, is almost unavoidable during parturition. Properly conducted there should be far less extensive injury and tearing of the parts than there often is, but even in the best hands a certain amount of injury is unavoidable. Suppose this injury produces a tear of the cervix, these tears rarely properly heal unless attended to at the proper time. A condition of chronic ulceration results, and later on cancer may develop on this site of chronic irritation.

Here is one definite point on which we can educate our patients. Following childbirth after a period of six or eight weeks every mother should be examined to see that the parts are quite normal, and if not proper treatment must be instituted to restore the parts to a healthy condition.

The history of most of these patients where cancer develops is that following the birth of their children they have had more or less continuously a vaginal discharge. Menstruation may perhaps be a little more profuse than usual. At the age of 45 or thereabouts they have the menopause. Menstruation ceases and they see no blood for perhaps some years. All this time the leucorrhea may continue. Then some day they notice that this discharge has an offensive odor, or there may be a little tinge of blood in it. When a woman discovers that she has a vaginal discharge tinged with blood after the menopause, she should consult a physician immediately. It may or may not mean that cancer has developed, but it so often does that not for a moment should there be any delay. Something is wrong or such a condition would not appear. It may be a simple condition, which comparatively simple methods of treatment will relieve, or if it is malignant more radical measures must be adopted, either cauterizing, radiation, curetting or whatever means

seem indicated. There are certain cases, however, where even if advice is sought as soon as symptoms appear, the disease has already become too far advanced for any but palliative measures to be employed. It is in these cases that radium has proved of such assistance. Such inoperable cases where formerly so little could be done to relieve distressing symptoms, or retard the progress of the disease, can in the majority of cases be helped considerably, hemorrhage be arrested, pain relieved, and the progress of the disease retarded.

Cancer of the Breast.

Any lump in the breast should arouse suspicion, and reliable advice sought at once. Many innocent or so-called benign growths develop in this region. All of these should receive proper treatment, as it so often happens that in later years a former innocent tumor may take on a malignant form. One also meets with thickenings of the breasts due to chronic mastitis, which has developed during nursing, and these two may undergo malignant changes in later life.

Cancer of the breast tends to spread to the glands in the axilla, and a lump in the breast with enlarged glands in the axilla is most suspicious of malignancy. Many of the benign growths respond well to radium treatment, and I have had a number of those in my personal experience. If any suspicion of malignancy exists it is often wise to cut out a small portion of the tumor under a local anaesthetic. This can be examined and a definite knowledge gained of the type of growth. If it is malignant the surgeon should remove it.

Cancer of the Digestive Tract, and its related viscera comes next in order of frequency, and presents a problem much more complicated than the preceding conditions. It is almost impossible to make a diagnosis in the early stages, and the earliness of diagnosis of such a condition is the most important factor in the treatment of cancer. The symptoms are very vague, so that the patient neglects to seek advice. He feels tired, "run down," "has a little indigestion," loses weight. Without consulting a physician he doctors himself with some much advertised "dyspepsia cure," or takes a change and rest. He may perhaps feel better for a short time, but sooner or later has to admit that he is ill. On consulting a physician the latter has to rely more on the history of the case than definite physical findings. True, in cancer of the stomach, one can obtain important help by examination of the gastric contents after a test-meal. It is most uncommon to feel any definite tumor mass in the abdomen, and if one does it means that the case is pretty well advanced. The treatment of cancer of the viscera is unfortunately most unsatisfactory. It resolves itself into surgical removal of the part where such is feasible. Too often this is impossible, and even if the condition is operable, recurrences are the rule rather than the exception. By exploratory laparotomy in cases presenting suspicious symptoms the disease may be detected in its early stages, and better results obtained from surgical procedures.

One method of prevention in cases of abdominal viscera involvement is then to educate the public or secure proper medical advice for what are often regarded as trivial symptoms, when really they are the forerunners of some serious condition. Particularly is this necessary when a person is of the cancerous age—that is, over forty.

Cancer of the Rectum.

An exception to the foregoing statements as to the difficulty of diagnosis in carcinoma of the intestine should be made in regard to cancer of the rectum. This is the commonest site for cancer of the large bowel to develop. The earliest symptoms are constipation, tenesmus and the passage of mucus with perhaps a little bleeding. There is often a dull aching pain in the part sometimes referred along the course of the sciatic nerve down the thighs.

Any such symptoms arising should lead his patient to see his physician at once, and the latter has not done his full duty by the patient unless he makes a very thorough examination of the parts.

As a rule cancer of the rectum can be readily detected by digital examination. If seen in its earliest stages complete surgical removal is advisable. If not operable the symptoms can frequently be relieved by a judicious use of radium, which checks hemorrhage, relieves the pain, and makes life much more bearable for the patient.

Cancer of the Tongue and Mouth.

Is one which comes next in order of frequency, and fortunately it is one where with early recognition of what may be the outcome, a great deal can be done in the way of prevention. A good many views are held by different authorities as to the exact underlying pathological condition in cancer of the tongue. One very eminent authority states that he has never seen cancer of the tongue, or of the inside of the mouth, develop in people who did not use tobacco, and he included both sexes in this. Others believe that cancer of the tongue never develops except on an underlying syphilitic lesion. No matter what different views may be held, it is quite well recognized that chronic irritation in some form will be found if careful search is made. This may be the sharp edge of a tooth, which for years perhaps has been rubbing against the tongue, setting up a chronic localized glossitis, which may break down to form an ulcer which in time becomes malignant. Any of these cases where there is the least suspicion can be readily settled as to diagnosis by removing a small portion of the lesion, under a local anaesthetic, and examining it under the microscope.

The same may be applied also to the diagnosis of the cancers which not uncommonly develop on the mucous membrane of the mouth, either on the inside of the cheek, the palate or the alveolar margins. One receives so frequently a history of a stump of a tooth being present and irritating the gum, or a badly fitted dental plate so irritating the mucous membrane of the palate that ulceration developed into malignancy.

Prevention in this region then will consist in having all sources of chronic irritation removed; the teeth with the jagged edges should be filed down or extracted, the ill-fitting plates should be changed and a proper one secured. If there is an underlying syphilitic basis proper treatment should be given, and recognizing the fact that tobacco is at least to a certain extent irritating, its use should be discontinued.

Cancer of the Lip.

Is relatively more common in men than in women. The factor of chronic irritation in its production is recognized in the term "smoker's cancer" so often applied to it. It is true that in nearly all cases patients so afflicted are smokers, but not necessarily so. The condition usually begins with what appears to the patient to be an ordinary cold sore or a cracked lip. These conditions are very slow in healing. Often one obtains a history of a scab forming over the lesion, but when it is detached there is still an ulcerated surface beneath. Then a hardened edge forms like a rim about the ulcer, and from being quite superficial the lesion becomes deeper and more firmly fixed to the underlying parts. If allowed to remain it is not long until the glands in the neck, to which the lymphatics from the lip extend, become enlarged, and the condition is a typical picture of neglected cancer.

Any "sore" appearing on the lip should be properly treated until healing is effected, and this is particularly true of those in middle life. Every such sore is not necessarily cancerous, but it is much safer to go on the assumption that it may be, than to procrastinate until the typical picture described above is present.

Any source of irritation such as is caused by the stem of a pipe or the use of cigars or cigarettes must be removed, as these only aggravate the difficulty.

The most effective way of treating such ulcerations on the lip in their early stages lies in the use of radium. It can be easily applied without discomfort or inconvenience to the patient, and brings about a ready healing of the ulcerated surface. By its use early cancer of the lip responds well to treatment, and I can think of several where after treatment it would be almost impossible to discover where the lesion had been. If the condition has, unfortunately, been allowed to extend so as to involve the deep tissues or invade the mucous membrane of the mouth, surgical removal is the best thing to advise, but the prognosis in such cases is none too bright.

Cancer of the Skin.

This presents itself in two forms, the so-called rodent ulcer and the cutaneous epithelioma. Rodent ulcer appears practically always on the face. It is a superficial, shallow ulcer, with a beaded edge, and if left untreated it spreads slowly but

surely until enormous areas are involved and death results from exhaustion. It does not form secondary deposits in the glands like the second class or cutaneous epithelioma, which appears usually as a lump, on any part of the body, and this lump soon ulcerates to form a deep crateriform ulcer with thickened everted edges, very often attached firmly to the underlying tissues. As said above the neighboring glands soon enlarge and secondary deposits may occur throughout the body.

Superficial Ulceration.

Particularly of the face, should at once suggest the development of rodent ulcer, especially if it develops around the margins of the eyelids or nose or in the nasolabial folds. This condition is one par-excellence for ease of cure, as after short exposures to radium practically all, without exception, heal up leaving a smooth and almost unnoticeable scar. Time, as in the treatment of cancer in other parts, is the essence of success, therefore the public must be taught to appreciate the importance of such apparently trivial ulcerations.

The cutaneous epithelioma often develops on the site of a mole or wart, which has perhaps been present for the patient's life time. As people get up in years these may enlarge, or ulcerate, and an epithelioma develops. Very often this occurs without appreciable cause, at such times such a wart or mole may be irritated the patient scratches it, which only produces further irritation, and the process goes on to malignancy.

It is wise then, and in accord with our endeavor to prevent this disease developing, to teach people that much latent harm resides in these small lumps, which may be situated any place on the surface of the body. They should be removed by any of the several means at our disposal, such as, by the use of certain causties, of which tri-chloracetic acid is one of the best, by the application of radium, or by excision, whichever seems best indicated in the particular circumstances. It is needless to say that such treatment should be carried out by a skilled physician, who is keenly alive to the pathology of the condition, and not done at any beauty parlor, so-called, which happens to be convenient.

Keratosis.

There is one condition of the skin in particular which demands consideration, and that is the development of rough, thickened patches of the skin, especially of those exposed to the weather very much. This is a condition known as keratosis, because it is an over-development of the horny layers of the skin. As it appears, as a rule, in later life, it is sometimes called "keratosis senilis." It is astounding how frequently epithelioma of the skin develops on the site of these spots of keratosis. These should therefore always command serious attention, and not be accepted as a necessary adjunct of increasing years. They can be readily treated by scraping them and applying tri-chloracetic acid to the base. A smooth, barely noticeable scar results.

We have considered the most common types of malignancy and those in which preventive treatment can best be exercised. Malignant disease developing in certain of the viscera is of course often very difficult to diagnose and sometimes presents very few symptoms until the disease is quite far advanced. Disturbed function no matter how slight is something that requires immediate attention.

Conclusion.

The public must be made to understand these facts, and as public health officials it is your duty to teach them on every opportunity that:

1. Statistics show that without doubt there is a steady increase in the number of cases of malignant disease.

2. After the age of forty malignant disease is relatively more common, and therefore after this age in particular—

3. Any chronic ulcer, lump, bleeding or disturbed function of any organ should not be neglected, but medical advice should at once be sought and proper treatment instituted.

By such teachings there is no doubt that an enormous number of cases of cancer will be prevented, or receive treatment while there is still hope of arresting the progress of the disease.

GERMAN IMMIGRATION AND THE ANGLO-SAXON

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Read before McGill University Graduates' Club, New York.

I HAVE to express the pleasure it has given me to accept the very kind invitation of your Executive Committee to be present as a guest to-night of the New York Association of McGill University.

I do not come as the bearer of any official greetings from either my University or any official body, but only as one who as a Canadian Government official for many years may be supposed to be acquainted with the general movement of Public affairs in Canada.

As a graduate of Toronto University I can assure you of my great interest in the fortunes of University men everywhere, but especially of those who, for what have seemed to them good reasons, have cast in their lot with our Anglo-Saxon Kinsfolk south of the 49th parallel. I am indeed convinced that never during the 'Hundred Years of Peace' has this Anglo-Saxon relationship meant so much to the two branches on this Continent of the old British stock as at the present moment. It has been my fortune during nearly forty years of this period to be engaged in some governmental capacity in prosecuting Public Health work in Canada, and thus have had the opportunity of studying especially in the field of immigration the political, social and ethical problems associated with the growth of the two great Anglo-Saxon peoples on this Continent now numbering nearly 110,000,000. While during the years succeeding the American Revolution the feeling in the United States was naturally strong against Great Britain, yet since 1815 there has gone on in recent years with an ever increasing momentum, the mutual cultivation of a sentiment of social justice, personal liberty and the recognition of the higher laws of a common humanity, limited by no international boundary and bound up with no self styled 'Kultur,' but only with that which recognizes the right of all men to the pursuit of liberty and happiness. So North is South, and South is North; The common bond is human worth!

Doubtless there are in your Company of McGill men assembled to-night some—perhaps many—who have been so long separated from affairs in Canada as to be somewhat out-of-touch with those movements, which in the past fifteen years have nearly doubled her population, and yet who are like the Scotch emigrant in that poem, by an unknown author, who with his acute sense of longing for home poured out his plaint:—

> From the far shiling on the misty island
> Mountain divide us and a world of seas:
> My heart is true and my heart is Highland,
> And in my dreams beholds the Hebrides."

To such I desire in a few words to speak of the growth not only of a National Canadian spirit, and of what this war is causing to crystallize out of 'the fluid elements,' a vitalizing Imperial spirit, but also, of what to the peoples of these two neighboring countries is of equal importance, the larger Anglo-Saxon spirit, which from the days of King Alfred and the Magna Charta, from Bannockburn, and the landing of the Pilgrim Fathers has made for freedom of thought, liberty of action and justice between man and man.

There were at the beginning of the 19-th Century some 5,000,000 people in the two countries composed largely of emigrants from Great Britain. The economic conditions following the close of the Napoleonic wars caused the first organized movements of emigration from Great Britain, while the political agitation which resulted in the Reform Bill of 1832 gave an even greater momentum to the movement toward the United States and Canada. By 1850 the total population of the

two countries was almost 25,000,000, when the census of the United States showed 1,113,000 Germans. The Continent of Europe during this half century had been the scene of agitation for constitutional reforms which culminated in the revolutions of 1848, resulting in the overthrow of monarchy in France and in various reforms in the confederated states of Germany of which for centuries Austria had been the dominant factor.

The effect of the struggle for freedom meant proscription, imprisonment and death for some in the fight for freedom and emigration for many more. Thus from 1848 to 1855 inclusive over 750,000 immigrants from Germany reached the United States alone. This emigration went on, the numbers falling off during the Civil War in America, but reaching again over 100,000 even in 1866, the very year of the War between Germany and Austria, and attaining its zenith in 1882 when over 250,000 entered the United States. This was the year when Bismarck adopted the trade policy which was to create modern Industrial Germany and by prohibiting immigration agencies largely checked the movement of Germans from their home land.

We think of the year 1870 as the period when, victorious in War over France, the modern German Empire was announced to the world, as Bismark had King William of Prussia formally invested at Versailles with the insignia of Emperor of the United German people.

To make clear, however, what the German people in the United States and Canada represent to-day I have placed in a table the immigrants from the official records.

	Total. Immigrants.
To United States from 1820 to 1913 inclusive	30,808,944
To United States from United Kingdom	8,039,875
To United States from Canada 1871 to 1911 inc.	3,378,814
To United States from Russia	3,003,356
To United States from Italy	3,691,919
To United States from Scandinavia	2,046,512
To United States from France Switzerland, Holland	943,503
To United States from Austria Hungary	3,765,222
To United States from Germany before 1850, 2,315,568; from 1870-89, 2,096,950; from 1890, 1913, 1,033,255	5,445,773

Similarly some idea of the character of the population of Canada may be gained from the following figures:

Total Immigrants to Canada 1815-1913	4,830,058
Population in 1910	5,077,680
Canadian born in 1901	4,671,815
Total immigration in 1900-1913	2,521,144
Total immigration from United Kingdom for same period	973,730
Total immigration from United States	871,129
Total immigration from Continent of Europe	656,285
Total immigration from Germany	30,762

I have selected these figures, bearing upon the chief racial sources of the population of both countries, to illustrate the essentially Anglo-Saxon character of the 110,000,000 people who occupy North America and to indicate how relatively small during almost one hundred years the actual German type of population has been, it having been but one seventh of the total immigrants in the two countries. But what is of even greater interest is the distribution by periods of this population. Nearly 50 per cent. of the 5,445,773 Germans came to America primarily to escape intolerable political and social conditions. In one German State after another the Revolutionists demanded in 1848,—(a) representative government to replace an absolutism: (b) a general or universal franchise: (c) reform of the land laws and the taxation of untaxed lands: (d) social and religious freedom. To avoid imprisonment and death thousands of Germans came to this continent of free laws and equal opportunity. Naturally we ask ourselves is it possible to conceive the American children of these soldiers of freedom and victims of political injustice listening to modern Germany's call for assistance only to place other nations under that German militarism and 'Kultur' which their forefathers

struggled against and who when defeated fled to this western continent?

But what about the two million Germans who came to America betwen 1870-1890? I have little doubt but that some of these who set their heels as conquerors upon the very halls of Louis le Grand at Versailles developed something of the swash buckler attitude as they marched home, the representatives of the people of the greater part of the three hundred petty States of 1815, which in 1848 were still 39, and which as little more than feudal estates were alike immical to ideas of modern freedom and national development. Nevertheless what a truly simple peasant people these Germans still were, may be understood from the thousands who came to us in America, and from the fact that in 1870 there were of the 41,000,000 people of Germany still 64 per cent. engaged in agriculture, while there were but 8 cities with more than 100,000 population.

But the Germany of Bismarck's dream was now to rapidly reveal itself. Bismarck believed and acted on the principle that Germany could only become united in fact under a military system so strong as to maintain peace at home and respect and fear abroad. But he had likewise been abroad and breathed the modern spirit. He analyzed the causes of Britain's and America's greatness and found them in industry and commerce and so began under his iron rule the building of the Germany of to-day. Modern science had been tried in war and had proved its immeasurable value under a system of military precision and efficiency. The little narrow gauge railways of the several states were gradually made of uniform gauge and placed under a general management; twenty-one universities were nationalized and the system applied of state aid to research in every field of practical science. Large combinations of capital were not only allowed but even encouraged in coal mining and iron making since Bismarck realized that these were the basis of manufactures and modern trade with the result that Germany has the most highly developed system of trusts of any country in the world. As a result the population dependent on industry and mining was in 1913 nearly 50 per cent. while that engaged in agriculture was only 28 per cent. What was tentative and experimental by 1890 had become a well organized system with rapidly developing results. Education had but one objective that of impressing on the child from kindergarten to the University and workroom that each individual was a necessary unit though an infinitesimal part of the Fatherland in the Chancellor's schemes for National greatness, superiority and domination. The only other modern example of a similar cult is Japan and, speaking for myself, I may say that both have demanded my keenest admiration as a system in which human effectiveness from a purely materialistic standpoint is the result. It breathes of the heroic, of consecration to duty, and of sensing the value of human energy in life. It would indeed be wholly admirable, had the divine breathed into it a soul. Instead Bismarck and those who have followed and imitated him have made it a machine in which only the intellectual and not the emotional part of man has been cultivated or been allowed to develop. As a matter of fact the million Germans who have come to America since 1890 have illustrated quite fully the educational ideals which had been taught during the 1870-90 period. A Prussian who has lived in England for twenty-five years thus represents the situation:

"It is perhaps the most startling result of civilization gone astray which can be imagined and it is the cultivation of a form of paganism such as the world has never known."

It is against this paganism, gentlemen, which the Allies and especially the British Empire is fighting and which is united by the sentiment which Tennyson expresses in that immortal "Ode on the Death of Wellington."

"O Statesmen, guard us, guard the eye, the soul
Of Europe; Keep our England whole,
And save the one true seed of freedom sown
Betwixt a people and their ancient throne,
That sober freedom out of which there springs
Our loyal passion for our temperate kings;
For, saving that, ye help to save mankind
Till public wrong be crumbled into dust

And drill the raw world for the march of mind
Till crowds at length be sane and crowns be just."

And what you ask are we in Canada doing to have this noble prayer realized? If indeed the English Cabinet believed that which Sir Edward Grey to the last planned and laboured for, it did not seem possible to them that the most gigantic act in history could be perpetrated through the German Emperor declaring war.

If they thought this in England surely we, 3,000 miles away could be forgiven for not believing such a war possible; but as our great Statesman has said. "When Britain is at war, Canada is at War" and we have been preparing to do our share. Within thirty days 33,000 men were assembled in Valcartier camp and in ten weeks, as the largest army which ever crossed the Atlantic, were on their way to Salisbury Plain. At once our small navy was placed under the direction of the British Admiralty, two submarines having been added to it the day war broke out. A second contingent of 25,000 men has been assembled and drilled and detachments are quietly crossing the ocean, while a third contingent is rapidly been enlisted. Our army is being wholly equipped in Canada and complete Army Service Corps and Medical Corps are organized for each Contingent. Of course a very considerable number of men are stationed at many points throughout Canada guarding frontiers and seaports, while home guards are drilling in many town centres. Army supplies of every kind are being produced or manufactured in Canada and a sense of playing some part, even though small, in the Empire's fight is taking possession of our people. The Patriotic Fund for caring for the families of the soldiers has reached over $2,000,000, while the Red Cross and Belgian Relief Societies are busily engaged in their charitable work. The several provinces were prompt to show their active sympathy as well as the Federal Government. Thus the following generous gifts of supplies were sent: The Federal Government as soon as war was announced sent 1,000,000 bags of flour to the British Government; Prince Edward Island sent 100,000 bushels of oats; Nova Scotia voted 100,000 tons of coal; Quebec sent 4,000,000 pounds of cheese; Ontario sent 250,000 bags of flour and 1,000,000 pounds of evaporated apples; Manitoba sent 50,000 bags of flour; Sasketchewan sent 1,500 horses; Alberta sent 500,00 bushels of oats; British Columbia sent 1,500,-000 tins of salmon. Parliament met from August 18 to 22nd and voted $50,000,000 for war purposes by an unananous vote. For a people celebrating a hundred years' peace it is surprising that so many have been aroused to action, since we seem so far from the actual scene of strife that we cannot be stirred as when the noise of battle is in our ears.

Now having stated briefly what Canadians are doing in the war we may very properly ask what the war will do for Canadians? It will have done many things.

(1st) Made us conscious of belonging to a world-encircling Empire, which when this fight for freedon and higher ideals is successful may justify our pride of Kinship.

(2nd) It will have made more evident than ever that the lion's whelp on both sides of the Border are now grown big enough to cease their playful quarrels and that they are partners in the same fight for the victory of spiritual ideals in the government of nations.

(3rd) If properly viewed the personal bereavements and losses of splendid young lives may breathe a spirit of calm and cultivate those ethical virtues which elevate the standard of family and social life, and may remove or moderate a tendency in Society on this Continent to make that very materialism, which has overclouded for the moment the oldtime household and communal virtues of the German people, the dominant influence in our national life.

(4th) On the other hand the war will indeed have been a tragedy if, after all the expenditure of life and energy and treasure, it should bring back thousands of men who, having learned the discipline of the soldier and having faced death in every form, should see in militarism the only good and whose influence would cultivate a spirit foreign to the ideals, which

one hundred years of peace have brought our two peoples to strive for even though imperfectly.

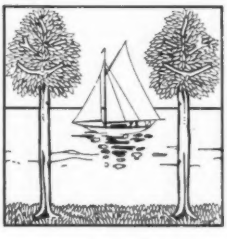
We have seen what Bismarck's military triumphs between 1860 and 1870 served to bring about in the character of the German people. We may fervently pray that the Public Press, that universal teacher, may preach rather the lessons of the War than stimulate the tendency of our emotional natures toward all the pomp and circumstances of glorious war. One thing it surely will do is to make plain that the twentieth century must see the end of racial and national ambitions, based primarily upon the tribal vanities of savages and the pagan pride of war chiefs, and shall witness the advance of a new age when the spiritual in the nations of the earth shall be attuned to a rythmic harmony of Being when,

"No longer half-akin to brute;
For all we thought and loved and did
And hoped and suffered is but seed
Of what in them is flower and fruit."

When as Tennyson still singing says:—

"For I dip into the future far as human eye could see
Saw the visions of the world and all the wonders that could be,
I saw the heavens filled with commerce, argosies of magic sails,
Pilots of the purple twiglight, dropping down with costly bales.

Heard the Heavens fill with shouting and there rained a ghostly dew
From the Nations airy navies grappling in the central blue.
Till the war drum throbbed no longer and the battle flag was furled
In the Parliament of Man, the Federation of the world."



CAN INSURANCE EXPERIENCE BE APPLIED TO LENGTHEN LIFE?

By MR. ARTHUR HUNTER,

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I HAVE stated my subject as a question, "Can insurance experience be applied to lengthen life?" and the answer is simple: It can. I have no doubt that the knowledge which the life insurance companies have acquired from their investigations regarding the mortality among their policyholders may be applied by individuals towards lengthening their own lives; but the difficulty arises of getting such information before the public in a form which can be readily understood. The investigations undertaken by the companies were primarily intended to assist them in determining which types of persons could safely be accepted for insurance at the regular rates of premium, which types should be charged an extra premium, and which should be declined. The purpose of the preparation of these statistics was not to excite public interest or curiosity, but for actual use in a great business. No haphazard methods have been used, but the most approved and scientific known to actuaries and medical directors; their knowledge of mortality is based upon the actual experience of companies with all sorts and conditions of men and women, and naturally appears in the form of statistics. Lest the word "statistics" should frighten you, let me point out that true progress in any science is made through recording the result of actual experience or of experiments, and that my statistics will be of this nature. They will constitute, in fact, a brief record of what has happened to mankind under certain conditions, and will not be difficult for the layman to follow.

Forty-three of the leading life insurance companies in the United States and Canada agreed in 1909 to prepare their collective experience on many different classes of insured. They decided to put the investigation into the hands of the Actuarial Society of America and the Association of Life Insurance Medical Directors. The companies supplied their records on about 2,000,000 lives, covering a period of twenty-five years. It is the largest and most comprehensive investigation ever undertaken by insurance companies anywhere. The object of the investigation was to determine from past experience the types of lives among which the companies had a higher mortality than the average. The results of the investigation have appeared in four volumes, and the fifth is in press. It has taken the Central Bureau about three and a half years of continuous labor to produce the results, using the most up-to-date machinery in the way of electric sorters and tabulators. A card was supplied for each of the policies issued from the years 1885 to 1909 among certain types, the history of the person being given on such card.

The insured were divided into many classes, of which the following are the chief groups:

1. Those who were in occupations involving hazard;

2. Those who had a family history of consumption;

3. Those who had a defect in their personal history, such as an attack of appendicitis, renal colic, rheumatism, syphilis, etc.

4. Those whose physical condition was not normal, as shown by indications such as a high pulse, irregular pulse, albumen in urine, etc.

5. Those whose habits with regard to alcoholic beverages were not satisfactory in the past, or who used liquor steadily at the time of application for insurance;

6. Those who were distinctly overweight or underweight.

It would be impossible to cover in a brief paper any but a very few of the important classes. Before describing these classes I should like to emphasize the fact that all the lives involved in the investigation had been carefully examined by competent physicians, and that, in general, the more

hazardous the occupation, or the greater the defect in physical condition, in family history, or in personal history, the more care was taken in selecting the lives. For example, in the case of applicants who were 20 per cent. overweight insurance would be granted in the majority of cases, but among those of extreme overweight very few would be accepted, and these would be the best of their kind. In order to determine the relative mortality, a standard or "measuring rod" was prepared, representing average mortality among insured lives, based upon the experience of the forty-three companies among all their insured. It is not necessary to describe this standard—merely to point out by an example the method of using it. When a class is said to have 10 per cent. extra mortality, it means that where the experience of the companies would have resulted in 100 deaths among their insured as a whole, there were 110 deaths in the specified class. Another way of making the needed comparison is by showing the number of years by which the average lifetime will be reduced, and this manner of exhibiting the degree of hazard will be used in some cases. In this connection it may be well to point out that a reduction in the average lifetime of say five years among a large group of men is a serious matter. It does not mean that five years is taken off the lifetime of only those who have reached age 65 or 70, but that the average lifetime of all men is reduced by five years. If in an occupation employing many men, such as mining, there were such a reduction, it would mean an economic waste in the United States equivalent to about five years of the lifetime of one million men, or a reduction of their productive lifetime by about one-sixth.

There were 97 different occupations in which the relative mortality was determined. I shall here deal only with three groups of these occupations.

OCCUPATION

Railroads. One of the significant results of the investigation was the high mortality experienced among railroad men. Among locomotive engineers, for example, the mortality was 60 per cent. in excess of that experienced among the insured as a whole, which is equivalent to five years' reduction in the average lifetime. If these locomotive engineers had been in a non-hazardous occupation, there would have been about 337 deaths, and there were actually 541 among them. Such a death rate can be reduced, as is proved by the results of the splendid efforts being made by a number of the leading railroads to educate their employees to assist in keeping down the accident and death rates. Some of the leading railroads issue monthly pamphlets, showing the best manner of coupling cars, shutting off air brakes, etc. They publish lists of men who have done good work in reporting deficient couplings, defective rails, etc., which might lead to accident. These railroads impress upon the men in every way the necessity of safety for themselves, and the effect which care on their part is likely to have on the future of their families. As a result of this campaign there has been a great decrease in the number of deaths. During the first six months of 1914 there was a decrease of one-third in the number of deaths among employees of one of the leading railroads over the corresponding period of 1913; and there was a decrease of one-quarter in the number of employees injured in the same period of 1914 as compared with the first six months of 1913. As in both of these years the company had in effect its plans for the safety of its employees, the above figures show that there is a continued improvement as the result of this campaign, and that the employees are learning to realize the advantages which accrue therefrom.

Mining Industry. One is also greatly impressed with the needless waste of life in connection with the mining industry. The mortality among working miners in all underground metal mines was more than double that among other insured lives. This is equivalent to an average reduction of fully nine years in their lifetime. If these men had been employed in non-hazardous occupations, there would have been about 280 deaths, while there were actually 642 deaths. More than 150 of these deaths were due to mining accidents. That a great reduction in the death rate from accident is possible may be inferred from the experience in corresponding occupations in Belgium, Germany and Great Britain.

Pneumonia and tuberculosis both cause a very high death rate among miners, and

this can largely be prevented through systematic education and through co-operation between the employers and the miners' unions. Much can also be done in reducing the number of accidents in the mines by such co-operation.

Space prevents my taking up other classes of the mining industry, and I shall therefore only state that the mortality was high among all classes of miners, including foremen, both in underground and surface mines.

Liquor Business. There is a general impression that saloon keepers do not live as long as persons in non-hazardous occupations, but it is not generally known that most classes which are connected with either the manufacture or sale of liquor have a high mortality. Among saloon proprietors, whether they attend the bar or not, there was an extra mortality of 70 per cent.; and the causes of death indicated that a free use of alcoholic beverages had caused many of the deaths. The hotel proprietors who attended the bar either occasionally or regularly had as high a mortality as the saloon keeper, i.e., the lifetime was reduced about six years on the average on account of their occupation. The mortality among those connected with breweries was about one-third above the normal. The large class of proprietors of wholesale liquor houses had an extra mortality of about one-fifth. In the fourteen subdivisions of the trades connected with the manufacture or sale of alcohol, there was only one class which had a normal mortality, and that was the distillery proprietors. The facts regarding the adverse effect on longevity of engaging in the liquor trade are such that, if they were generally known, young men who are easily tempted would be deterred from entering this business.

The high mortality in some of the occupations to which reference has been made must not be ascribed to the men having other defects, such as a tubercular family history. Where there was any defect in the physical condition, in the family record, in the habits of life, etc., the insured was not included in the investigation of the mortality of men in the occupation. In the same way, in investigating the mortality of insured with a defect in family record or personal condition, no men in hazardous occupations were included in the groups investigated.

DEFECTS IN PERSONAL OR FAMILY HISTORY

There were 49 classes investigated in which the insured had a defect in his physical condition, personal history, or family history. I shall refer only to a few of these in which the public are likely to be most interested.

Syphilis

It has generally been assumed that syphilis increases the death rate, but no facts relating to this country have heretofore been published showing the serious effect of that disease on mortality. The forty-three companies accepted only the better type of cases with a history of syphilis. Taking all the cases in which the insured admitted having syphilis prior to the date of application for insurance, the companies had 274 deaths, while the normal mortality would have been about 153; that is to say, there was an extra mortality of about 80 per cent. due to that disease. The same results have been found in other countries. For example, among the men insured with the principal German company there were 487 deaths among those who had undergone treatment for syphilis, while there would have been only 290 deaths according to the experience of that company among all their insured lives; the excess mortality was therefore nearly 70 per cent. The only other published investigation of which I am aware was that made by the Scandinavian companies, which showed a mortality as high as in the German company to which I have just referred. This is sufficient evidence of the bad effect of syphilis on the individual. It is hardly necessary to mention that, in addition to shortening men's lives, it shortens their period of activity while they are alive. Locomotor ataxia and softening of the brain are believed by medical men to be due to syphilis in the majority of cases.

It must not be assumed that the high mortality is due to the companies accepting cases which had not been properly treated for syphilis. One of the classes consisted of men who had had two years' continuous treatment, and one year's freedom from symptoms prior to acceptance by the

insurance companies, yet the excess mortality was 80 per cent—a decreased lifetime of about six years. A disease which shortens the life and limits the activity of the individual, and which causes untold misery and suffering to the progeny, should be and can be banished by an intelligent public opinion.

Habits as to Alcoholic Beverages

Nothing has been more conclusively proved than that a steady free use of alcoholic beverages, or occasional excesses, are detrimental to the individual. In my judgment, it has also been proved beyond peradventure of doubt that total abstinence from alcohol is of value to humanity; it is certain that abstainers live longer than persons who use alcoholic beverages. The low mortality among abstainers may not be due solely to abstinence from alcohol, but to abstinence from tobacco, and to a careful regard for one's physicial well-being.

Among the men who admitted that they had taken alcohol occasionally to excess in the past, but whose habits were considered satisfactory when they were insured, there were 289 deaths, while there would have been only 190 deaths had this group been made up of insured lives in general. The extra mortality was, therefore, over 50 per cent., which was equivalent to a reduction in the average life of these men of over four years. If this meant that four years would be cut off the end of the average normal lifetime of each man, there are many who would consider that "the game was worth the candle"; but it means that in each year a number of men will die at an earlier age than they should. For example, at age 35, the expectation of life is 32 years; in the first year after that age, instead of, say, 9 persons dying, there would probably be 12 deaths; that is, three men would each lose 32 years of life; in the next year probably four men would each lose 31 years of life, etc. As a matter of fact, many immoderate drinkers would live longer than 32 years, but not nearly so many as would live if they had been moderate drinkers, and far fewer than if they had been total abstainers from alcohol.

With regard to men who had used alcoholic beverages daily but not to excess, the experience of the companies was divided into two groups: (a) men who took two glasses of beer, or a glass of whiskey, or their equivalent, a day; (b) men who took more than the foregoing amount, but were not considered by the companies to drink to excess. The mortality in the second group was found to be fully 50 per cent. greater than in the first—an excellent argument for moderation in the use of alcoholic beverages. The foregoing result does not mean that the large excess mortality in Class (b) was due to their drinking a little more each day than those in Class (a). It is probable that among those who were very moderate users of alcoholic beverages there were comparatively few who eventually used liquor immoderately; but among those who took more than a glass of whiskey or its equivalent a day there were probably a goodly number who increased their daily consumption after having applied for insurance, and who eventually drank to an immoderate extent. Part of the hazard from alcoholic beverages lies in the user losing the power to limit himself to a moderate consumption.

Among the men whose habits were formerly intemperate but who had reformed for at least two years prior to their acceptance by the insurance companies, the extra mortality was fully 30 yer cent.; i. e., their average lifetime was reduced by about three years. This excess mortality is partly due to the effect of previous intemperate habits in undermining the system and partly to a proportion of the persons relapsing into their old habits.

In the foregoing classes men who were in the liquor business, or in any other occupation involving hazard, were excluded.

The Committee of the Medico-Actuarial Mortality Investigation did not make a report on the mortality among total abstainers, but sufficient statistics have been published by individual companies to justify the statement that persons who have always been total abstainers have a mortality during the working years of life of about one-half of that among those who use alcohol to the extent of at least two glasses of whiskey per day. In view of this, the effect of prohibition of the manufacture and sale of alcoholic beverages in Russia must be very great. If the Government of Rusia carry out their present intention to abolish permanently all forms of alcoholic beverages, the saving in

human life will be enormous. It is not too much to say that the loss of 500,000 men as the result of the present warfare could be made good in less than ten years through complete abstinence from alcoholic beverages by all the inhabitants of Russia. In the New York Times of November 19th a former member of the Duma, a man who has worked for prohibition in Russia for many years, Michael Demitrovitch Tehelisheff, states that already the results of the abstinence from vodka are seen in the peasants; "they are beginning to look like a different race." He states that in the factories the efficiency of the worker has greatly increased, that women and children who suffered from violence of the husband and father through his addiction to vodka "suddenly found themselves in an undreamed-of paradise. There were no blows, no insults, and no rough treatment. There was bread on the table, milk for the babies, and a fire in the kitchen."

Pleurisy

What may the public learn regarding such an apparently uninteresting subject as the death rate in an insurance company from pleurisy? They may learn that the deaths from tuberculosis of the lungs among persons who had had pleurisy within five years prior to insurance were three times the average number. The public should be told that an attack of pleurisy is followed in many cases by tuberculosis, and that, accordingly, after an attack of pleurisy every precaution should be taken to guard against infection from tuberculosis.

Family Record of Tuberculosis.

Twenty years ago it was believed that tuberculosis of the lungs was directly inheritable, and, accordingly, it was the custom of most companies to decline to grant insurance on applicants either of whose parents had died of tuberculosis of the lungs. After it was ascertained that tuberculosis was apparently due to contagion, the companies liberalized in their treatment. It was noted, however, that there was an excess mortality among persons with a family history of tuberculosis even when care was taken against contagion, and many physicians were led to believe that a predisposition to that disease could be inherited. In the latest investigations it has been feasible to make subdivisions with a view to determining the types of persons among whom the mortality had been high, and thereby to arrive, if possible, at the reasons for the apparent predisposition to tuberculosis. Among light weight men who had a parent die of tuberculosis the mortality was high at the younger ages, but normal at the older ages. It may be said, in general, that, except at young ages, the longevity of persons above the average weight is not affected by a family history of a parent dead from tuberculosis. The mortality among men who had a brother or a sister die of tuberculosis was not materially different from that among men who had a parent die from that disease.

Unfortunately, these statistics do not show definitely whether or not a predisposition to tuberculosis is hereditary, but it has been indicated that there is a predisposition to light weight, which is a condition favorable to the development of tuberculosis. Among young men who were, when insured, at least 25 pounds under the average weight, and who had a parent, brother or sister die from tuberculosis, out of every ten deaths five were due to tuberculosis. This is an appalling waste of life, which could be greatly decreased by proper care and sufficient nourishment. Among young men with the same family record of the disease, who were slightly overweight, three out of every ten deaths were from tuberculosis; while among those distinctly heavy, out of every ten deaths only one was from tuberculosis. A well-nourished man, taking reasonable precautions against contagion, has little to fear from tuberculosis. The lesson to be drawn by the community from the experience of the insurance companies is that the inhabitants should be well nourished in order to reduce the great economic waste which comes from tuberculosis. That this waste is very costly there can be no doubt. Dr. Hurty, the Indiana Health Commissioner, states that "the cost of preventable consumption to the people of Indiana is not less than ten million dollars a year."

Among persons who were very light in weight but who had not a family record of tuberculosis, the death rate from that disease was high.

During a time of war the dependents of those in the army and navy are looked after by their governments, although generally in an inadequate way; but in time of peace comparatively little attention is paid to the dependents of those afflicted with tuberculosis, frequently acquired as the result of conditions which the governments could prevent. There is unquestionably a great need for the state or the community providing means of subsistence for the families of the breadwinners under treatment for tuberculosis. As great a need also exists for suitable employment for those who have recently been cured of tuberculosis and who are not yet fitted for their regular occupation, or must change from indoor to outdoor work. It is beginning to be recognized that the man or woman afflicted with tuberculosis should not be hindered from recovery by anxiety about the conditions of their dependents; but it is equally important that the breadwinner should not be required to take up hard or unsuitable work too soon after recovery, because a relapse means that the treatment must begin again with a discouraged patient.

Influence of Overweight on Mortality.

There is no doubt that marked overweight has a material effect in decreasing length of life, especially at the middle and older ages. For example, among men 40 pounds above the average weight the lifetime of those who entered the companies at age 45 was about four years less than that of men of normal weight. The public should understand that marked overweight is a serious handicap to length of life, and that the adage, "Laugh and grow fat," is not good advice for the man or woman who is inclined to be heavy. Diabetes, Bright's disease, heart disease and apoplexy cause a large proportion of the deaths among the overweights. While the over-eater is not such a bad social influence as the excessive drinker, the former is also shortening his life by lack of moderation.

In conclusion it should perhaps be stated that the statistics of the Medico-Actuarial Mortality Investigation were not compiled with intent to prove or disprove a particular theory, as so frequently happens when partisans engage in the preparation of statistics in support of their point of view. The companies put their records in the hands of a committee of actuaries and medical directors and asked them to determine what the true experience has been. The statistics, therefore, represent the facts.

This investigation shows effects of incorrect living and frequently indicates the way in which improvement may be made. The officers of the companies are glad to have such information given to the public, since they know it will be of direct benefit in reducing the death rate and because they are interested also in such matters from the standpoint of the general welfare.

THE RECENT AUSTRALIAN EPIDEMIC OF SMALLPOX

By W. E. HOME, M.D.

At Sydney, New South Wales, on 30th May, 1913, the manager of an underclothing factory employing two hundred girls, reported the occurrence of infective rashes amongst his staff during the preceding two months. On investigation it appeared that there had been many cases of rashes on the face, sometimes also generalized, and preceded by attacks of "influenza," with headache, giddiness and shiverings. Some were so slightly affected they had not even stayed away from business. Two had taken medical advice and been told there was nothing much the matter. None of the girls affected had ever been vaccinated.

The first case that was traced occurred about April 25, on which date she had had "influenza," and three days later had shown a pimply rash on her face. It appeared she had been very friendly with a steward on the SS. Zealandia, which had arrived at Sydney on April 12 from Vancouver, B.C. She had seen him on the day of his arrival (13 days to onset), and on subsequent days, and he was then suffering from a rash on his face. The steward had left Vancouver on the 19th of March, and 16 days later (April 4) took ill with severe headache, pains in the stomach, great weakness (but no vomiting), and stayed in bed two days, but did not see the doctor. Five days later (April 9) his face "broke out in pimples." When seen on June 26 he had six "pits" on his forehead and several others on his cheeks. He was at that time vaccinated and gave a much delayed and modified reaction—though he said he had been vaccinated in infancy, he showed no marks.

Of the girls in the factory some had never gone on to eruption, some had staining of the skin, some had scaling, many had depressed cicatrices (pitting), numerous or few. Patients stated the eruption came out in successive crops.

A case was seen in hospital on 31st May and, after very careful consideration, was diagnosed officially as chickenpox. On June 18 a case occured with more severe constitutional symptoms, and the question of smallpox was in doubt. Six persons who had had this disease, but had never been vaccinated, were tested by vaccination. None reacted, but six controls all developed perfect vaccine vesicles in the usual time. By 1st July conviction had been reached and smallpox was formally declared to exist in New South Wales.

Perplexity was much increased by the unusual prevalence and severity of chickenpox at this time in Sydney, where 3,000 cases were reported in 1913. Chickenpox however, occurred among the vaccinated, and those who recovered from chickenpox were as susceptible to vaccination as were the general public. Further those who showed the perfect scar of a vaccine vesicle, however small, were absolutely immune to smallpox throughout this epidemic.

Vaccination of contacts prevented infection if the vaccination were successful, and if it were done on the first or second day after exposure.

The usual histories of vaccination protection are reported. The Commonwealth of Australia had a staff of fifty-two at the Quarantine Hospital. All were vaccinated and all escaped the disease. New South Wales Health Department had a staff of fifty-two. All were vaccinated but one, and that one man alone contracted smallpox.

The epidemic had but a low infectivity, and required to be conveyed by direct personal contact. The toxaemic fever of invasion caused often high temperature, but on the other hand little malaise. Prodromal rashes are not reported. The rash was sometimes normal, generally the pocks were smaller than usual and passed through the popule-vesicle-pustule stages very quickly, and besides appeared in successive crops. The rash was sometimes confluent. The eruption fever was very slight. Only one case died among the

1070 attacked, a parturient woman, who collapsed two and one-half hours after child-birth.

Diagnosis was best made by the distribution of the rash, which occurs more on the upper part of the body, more on the upper half of the face, more on the distal parts of extremities, and more on the hands than on the feet, more on the back than on the abdomen, rather on the extensor surfaces and particularly attacked irritated areas of skin.

The outstanding lesson of this slight but expensive epidemic is the need for very anxious consideration of all eruptions on face and body which follow, with a few days interval, an attack of indefinite pyrexia called "influenza." Smallpox differs from all the other exanthemata in its double fever curve; it shows first a pyrexia of onset, the toxaemic fever, then there is a remission of a couple of days, when again the temperature rises in the eruptive fever associated with the outbreak of the rash. The responsibility of a ship's surgeon is very clearly illustrated, and not only for cases that come before him, but in relation also to cases of disease occurring on board and concealed. But, of course, no carelessness on his part will convey an epidemic of smallpox to a well vaccinated population.

The above account is abstracted from the paper of Dr. W. G. Armstrong, Senior Medical Officer of Health of New South Wales, read to the Epidemiological Section of the Royal Society of Medicine in London and recently appearing in the Proceedings of the Society.

THE WOMEN OF FRANCE

By FLORENCE WITHROW, B.A.

MANY historical sketches have been written about the countries of the Allies, but comparatively little mention has been made of the part women have played in these histories. Therefore we offer an outline of the activities and industries of the women of France, with a separate list of notable characters from the time of Clovis 500 A.D to that of Mons. Poincare a present.

We purpose giving first the list of famous women as they appear in history, literature, art, music and science. Incomplete as it may be, it will serve to show what woman's influence has been in France during 1,400 years. No country, save possibly England, could present so noteworthy a number, for in versatility and capability French women have never been surpassed.

Let us head the series with notable Queens who have had a marked influence on France's destiny. First comes Clotilda (475-545), wife of Clovis, first King of the Franks, whose influence over her rough pagan husband was very great. She induced him to invade Burgundy to avenge her father's death and also persuaded him to accept Christianity. With the assistance of St. Genevieve, Clotilda founded many monasteries and churches. Years after she was canonized and her bones were especially protected during the Revolution.

Even greater than the King's was St. Genevieve's power to hold the people when Attila threatened their destruction, and later when they suffered from famine she took command of the boats which went to Troyes for aid. The wonderful mural paintings in the Pantheon pay lofty tribute to the useful life of this patron-saint of Paris.

Eleanor of Acquitaine (1122-1203) also had power, but it lay in her vast domains. When divorced from Louis VII., whom she accompanied on the Second Crusade, she married Henry Plantagenet (Henry II.) and thus brought to the English crown more territory in France than it held in England. For inciting her sons Geoffrey and Richard to rebel against their father she was imprisoned for 16 years until Henry's death. Coeur de Lion then appointed her Regent on his departure for the Holy Land, and when he was taken captive she went in person with his ransom. She also negotiated his marriage with a princess of Navarre, and lived to see him succeeded by his infamous brother John.

The wife of Edward II., Isabella, sister of Charles V., also possessed vast estates in France. The Hundred Years' War was partly occasioned by her son Edward III. claiming the French throne through his mother's right. She was a wicked, revengeful woman, and probably a murderess, as she incited a domestic rebellion under her paramour Mortimer, who seized the King, had him deposed and imprisoned in Berkeley castle, where he was foully murdered. Isabella with Mortimer assumed the Government for her 13-year-old son and made ignominious peace with Scotland. The Welsh Mortimer aimed at the crown, so was hanged at Tyburn gallows like a common felon, and the intriguing Queen was confined in Romsey Manor for the rest of her life.

Another French princess, Catherine (1401-1438), daughter of Charles VI., wielded a curious influence by becoming the foundress of the Tudor dynasty. She was the Queen of Henry V., "Bluff Prince Hal," distinguished at Agincourt. On his death she married Owen Tudor, a Welshman, and their son was Edmund Tudor, whom her son, Henry VI., created Earl of Richmond. He became the father of Henry VII. by Henry's V.'s niece Margaret Beaufort.

One of the most beautiful and accomplished of French Queens was Blanche of Castile (1187-1252), partly French, the mother of St. Louis, who brought up her son in the fear and admonition of the Lord. He owed his spotless life largely to his good mother, who personally attended his training from earliest youth. In political

affairs she was the inspiring genius of her husband Louis VIII., to whom she sent reinforcements when he was invited by the nobles confederated against John, to accept the English crown. She carried the banner of the Cross in the Crusade against the Albigenses and went to Egypt with the ransom for her son. Also she secured to the Crown the rich inheritance of the Counts of Toulouse. Besides, her life was full of charities, and her death was deeply mourned.

Perhaps the most important Queen in point of possessions was Anne of Brittany (1476-1514), the wife of two successive French Kings, Chas VIII. and Louis XII., who united her valuable kingdom of Brittany to that of France. She was a much-sought after Princess, and had been affianced to Maximilian of Austria. She was noted for virtue and industry, and managed the government with ability during the campaigns of her husbands in Italy.

Margaret of Navarre (1492-1549) was notable because she wielded marked influence in favor of the Reformers, and especially protected Calvin, and while her brother, Francis I., was a prisoner at Pavia she undertook the Government. Her daughter became the mother of Henry of Navarre, the founder of the House of Bourbon.

Queen Claude, wife of Francis I., was a woman of high moral worth. To her Court was attached Anne Boleyn (French ancestry), who was dismissed by the Queen on account of her questionable behavior. Some years later, by a cruel but oftimes just irony of fate, Anne's fair head fell on the block to pay the penalty of her faithless life at the decree of her yet more faithless royal spouse Henry VIII.

Two Queens who were not beloved were Catherine de Medici (1519-1589), a Florentine, only daughter of Lorenzo, but of French descent, and her daughter, Marguerite de Valois (1553-1615), divorced and depraved wife of Henry of Navarre. Both were ardent Roman Catholics. The marriage of Marguerite with Henry IV. was celebrated Aug. 18, 1572. Some claim the date was fixed to attract to Paris the principal Huguenot leaders in anticipation of their massacre. Catherine was jealous of the influence over the King of the great Huguenot Commander, Admiral Coligny, so contrived to have him assassinated Aug. 22, but the attempt failed. Partly to avenge this and also through hatred of Protestants she determined on their extirpation. Her weak son, Charles IX., became her tool, and was forced to give the signal for this by the tolling of the matin bell in the church of St. Germain L' Auxerrois. She herself waved a handkerchief from the Louvre palace as a sign for the tocsin to be sounded, which commenced the massacre of St. Bartholemew's day, Aug. 23, 1572. The execution of this wholesale murder, which spread throughout France and the Netherlands, was intrusted to the Dues de Guise and the Queen's Italian guards. Catherine de Medici was the mother of three kings, Francis II., Charles IX. and Henry III., all weaklings and mere creatures of their arrogant, artful and avaricious mother. She is accused of various murders, most notably of the Due de Guise and his brother, Cardinal of Lorraine.

Our fair and fated Mary Queen of Scots (1542-1587) was her daughter-in-law. She was the daughter of Mary of Guise, a mistress in the art of finesse. The young princess, more French in temperament than Scotch, was taken to France when only 6 years old and married to the Dauphin at 16. Her whole life at the French Court under the influence of Catherine de Medici and of her unscrupulous uncles, Dues de Guise, was one of deceit and trickery. In fact duplicity was deliberately cultivated in those days and considered an accomplishment. Small wonder then that Mary Stuart's after years were filled with connivance and intrigue. Mary was Queen of France for 17 gay months and Queen of Scotland for 8 sad years. She had been crowned Queen as a babe, but Regents ruled, she was sought in marriage for young Edward VI. but French influence preventing this, Henry VIII. in anger invaded Scotland and defeated the Scotch at Pinkie when Mary was but five years old.

The story of the Casket letters, the Kirk o' Field's tragedy, the long years at Fotheringay, the cruel death are so well known, we do not take time to chronicle them here.

Elizabeth of Valois (1545-1568), daughter of Catherine de Medici, is important as

having diverted Philip II's determination to marry Elizabeth of England on the death of Mary. At 14 she was betrothed to Don Carlos (son), but on seeing her portrait Philip decided to wed her himself, and thus his whole policy toward England was changed and he became a bitter foe.

Marie de Medici (1573-1642), the second wife of Henry of Navarre, was the mother of Louis XIII. and of Henrietta Maria, wife of Charles I. of England, and was Regent for some years during her son's minority. Her mind was that of a man, but her vanity equalled the weakest of her sex. She quarrelled with both husband and son, but effected a most "gorgeous reconciliation." Fond of show and ostentation, she ordered Rubens to paint monster canvasses depicting the glories of her reign. These were designed for her palace of the Luxemburg, but are now in the Louvre Gallery. Her life was full of trouble and dissention. Finally she was banished by Cardinal Richelieu and died in comparative poverty in Cologne, after having been ordered to leave Antwerp, where she resided in the house of Rubens.

Anne of Austria (1604-1666), daughter of Philip II. of Spain, was the powerful Queen of Louis XIII. She became Regent and by her despotic treatment of magistrates and others who opposed her Court brought on the Wars of the Fronde. This was a political faction which headed an insurrectionary movement. Frondeors means "slingers," and was applied to the sneers and attacks upon Cardinal Mazarin and the Queen. Richelieu, jealous of her authority, sought to have her exiled, but without success. Instead she superceded him by Mazarin, who ruled in her name, and to whom she was said to be secretly married, although she lived a life of open scandal.

Elizabeth, daughter of Henry IV., was a woman of great heroism. She became Queen of Spain by marrying the lethargic and pleasure-loving Philip IV. (1621). In 1640, when Portugal broke from Spain she took the Government in hand and sent the King with the army to retrieve their lost fortunes. She sacrificed her jewels, reduced her household expenses, displayed wisdom and elert judgment, and her death was mourned as a national calamity.

Three ill-fated queens were Marie Antoinette (1755-1793), Empress Josephine (1763-1814), and ex-Empress Eugenie (1826—still living). None of these were born in France, but were French in temperament and influence.

The first was the youngest daughter of the illustrious Marie Theresa, Empress of Austria, who married her to Louis XVI. Sumptuous in the extreme was the retinue which brought the young Queen to her new Court. Gorgeous and gay did she find it and a suitable centre for her 1,000 dresses and extravagant accessories of toilette. Little did she know of the seething masses of poor and starving in the land so no wonder the ferment of unrest culminated in the memorable march of the mob to Versailles.

Unfortunately Marie Antoinette was never beloved by the populace, for they were prejudiced against her from the first. Naturally her apathetic attitude toward their grave conditions augmented that prejudice. She was accused of influencing the King against the people's interest and of meddling in politics. She strongly opposed the assembling of nobles to consider financial conditions and was nicknamed Madame Deficit. She was held in ridicule in many sarcastic songs, and at the opening of the States General was received in a manner which deeply offended her pride, and which caused her to wildly exclaim that it was her destiny to make mischief and to be scorned.

Howsoever much or little she merits condemnation, Marie Antoinette surely bore expiation to the bitterest end, for a more cruel and tragic death has no woman ever borne. Gibed and hissed, separated from her husband for 6 months before his death, imprisoned for 14 months, mocked and starved, then guillotined eight months after her King, such was the fate of the once proud and pleasure-loving Queen. With her own hand she cut off her beautiful fair hair, and with neither haughtiness nor humility, but with serene resignation and a prayer for her enemies she stepped to the scaffold.

No sadder tomb is there in France than that of the defiled and decapitated royal victims of the Reign of Terror. In the crypt of the church of St. Denis, where-

in lay the bones of France's Royal Line, in a gloomy side chapel stand two long wooden boxes. Scarcely discernable are they, save by the fitful flicker of a dim gas jet. No monument, no wreath is there. Within the deal box reposes all that remained of the multilated bodies. After life's fitful fever there they rest.

Madame Elizabeth, the sweet and courageous sister of Louis XVI., should be mentioned. She endured all the trials and ignominy of the royal family and was imprisoned with them in the Temple. This brave souled princess sustained the broken spirit of the King and Queen and was herself guillotined at the early age of 30.

The story of the Empress Josephine is both brilliant and "blurred" into a sombre dimness. She was born in Martinique in the West Indies, at 16 was married to the Vicomte de Beauharnais and brought to Paris. When a bride she was presented at Court, and in her memoirs tells of the grace and charm of the Queen's salutation. In those gay days little did either dream of the tragedies that were to befall them. Simply because he was an aristocrat, the Vicomte was guillotined and Josephine narrowly escaped the same fate. Her name was on the conscription list and she was imprisoned, but by the mediation of Mme. de Fontenay, a fellow prisoner, she was liberated.

She is said to have met the young artillery officer Bonaparte on a visit to thank him for delivering to her son his father's sword. The story of her marriage and later her brilliant career as Empress is well known. At her coronation, which was preceded by the religious ceremony of marriage, the Emperor himself crowned her, and even after divorcing her declared her imperial rank and titles should remain. Returning to Paris from his various triumphs of war, the Imperial couple sometimes appeared together in state and were accorded an immense ovation, at which times Napoleon was justly proud of the Empress, who was always radiant in form and fashion. There is no doubt his devotion was deep rooted, for even on the battlefield his letters to her were frequent, and after she was established at Malmaison he paid her periodic visits. Naturally her life was forever after clouded, and at the age of 51 she died one year before Napoleon's downfall at Waterloo. She loved the little L'Aiglon, the child of Marie Louise, who was brought many times to visit her. By a strange irony, this young King of Rome never succeeded his Imperial father, but died at 21 in Vienna, having become a dissolute youth, styled the Duke of Reichstadt. A stranger fate made Napoleon's successor the supposed son of Josephine's daughter Hortense and Napoleon's youngest brother Louis, although facts seem to point to Napoleon III. being the son rather of a Dutch Admiral. Through respect for Napoleon the Great's heir, although he never reigned, "third" rather than "second" was the title chosen.

Napoleon III. was neither the military genius nor the man of brain as was Napoleon I. But he possessed his egotism and colossal ambition. In this his consort Eugenie well aided him. His famous coup d' etat, whereby he proclaimed himself Emperor was largely the result of her influence. Both loved display, and the baptism of the Prince Imperial in Notre Dame Cathedral, for which occasion a gorgeous gold coach was built, is said to have surpassed the records of royal christenings. Nemesis followed in the early manhood of this prince, for he was killed in the Zulu war fighting for England, but an imperishable monument of his stainless life rests in St. George's Chapel, Windsor, placed there by the admiring affection of Queen Victoria.

After a forced flight from the Tuileries Eugenie fled to England, and after his defeat at Sedan, 1870, Napoleon followed her. During his three years' exile in England until his death he received the most considerate attentions of Queen Victoria and the Prince of Wales. The ex-Empress still lives in the South of England. She enjoys the close friendship of the royal family, and is said to have had a Catholic influence over Princess Ena (Queen of Spain), whose god-mother she is. Through abundant wealth she has performed generous acts of charity, and at present has given her home at Chiselhurst for a soldiers' hospital.

Alas, her life story is one of broken pride and disappointed hopes. On her death what a flood of both brilliant and pathetic memories will be recalled.

Next month—French women in literature, music, art and science.

The article by Dr. Aikins in this issue is interesting and timely. Next month we shall publish the Symposium held recently at the Academy of Medicine, Toronto on this vital question. It cannot be too strongly emphasized. Cancer is a devastating scourge. It can be made less prevalent and the percentage of cures can be materially increased. Let us learn how.

Cancer.

As Canadians we are proud of our soldiers. Their deeds have proclaimed the strength of our loyaly to the Empire and demonstrated once more the keenness and ability of Canadians to meet emergencies on the battlefield. While the tears dimmed our eyes as we read the lists of the slain, our hearts beat a triumphant note of joy in our boys' achievements. In spite of graft, in spite of scandal, in spite of everything that could possibly be done to make our Canadian soldiers disgusted and disgruntled, the British Army has no better fighting men on the firing line. There will be much sorrow in Canadian homes these summer months, but when it is all over and the cause of Righteousness, Liberty and Justice shall have prevailed every broken heart will be truly thankful that a loved one has been called to pass through fiery trials for his country and the Empire.

The War.

In our March issue the following words were used in describing the poet's present interests. "Dr. Roberts enlisted in September last as a trooper in the Legion of Frontiersmen and went to England at his own expense. He served for two or three months at Bristol and Southampton in the training of Cavalry horses, a work of skill and vigor, which he loved and was then given a commission as First Lieutenant in the King's Liverpool Regiment. By persistent study and drill he gained the mastery of an officer's duties and late in January was granted a commission in the Royal Field Artillery." The Bookman says. "Mr. Chas G. D. Roberts the nature story writer has been promoted captain in the 16th King's Regiment. He joined as lieutenant in December last having previously been a private in the Legion of Frontiersman." This is the only error which has crept into the information on the lives of the Canadian Ports which we are presenting in series.

Chas. G. D. Roberts.

We were much impressed with an article in "Canadian Insurance" refering to the financial strength of our Insurance Companies, particularly evident in such a time of stress as we are now passing through. The Public Health Journal has found the

Life Insurance Companies.

Insurance Companies staunch friends and their advertising space in our pages is sustained no matter what comes. We are working towards a common goal, the betterment of the Canadian people. We both desire to see life prolonged and made happier. We desire to witness a more contented people. If the lessons which have been taken to heart by Insurance Companies in the conduct of their business could be learned by individual Canadians, thrift and health would be more common than at present. Insurance Companies are opposed to the methods of the Get-rich-quick artists who have been the menace of Canadians during the past decade. Their business principles are sane and sound.

It is the usual thing just now to hear complaints, at the head offices more particularly, that

1. New business has decreased.
2. Loans to policyholders have increased.
3. Lapses have increased.

You hear little or nothing about the more important facts that

4. Interest earnings have increased.
5. Surpluses have increased as usual.
6. Dividends to policyholders are increased in many cases.
7. Mortality is excellent.

Well: What would you.

Here we have the greatest crisis the world has ever faced or ever will face. We have bad trade in Canada and worse in the States. We have great unemployment in all our cities and a dwindling population compared to the high boom times of 1911 and 1912. Commercial failures have been numerous. The banks have closed their coffers and ceased to be the generous supporters of industry and speculation they used to be. They have given mighty offence to the Canadian public, who will not forget it either.

One bank and one trust company have failed in the West. All the railways report terrific decreases in net receipts. Hundreds of commercial corporations in the world have ceased to pay dividends to their stockholders.

The stock market is on the blink. Stock brokers can't pay their car fares, and dozens of them are in jobs at $10 or $15 a week. Loan companies, mortgage companies, bond companies are all complaining bitterly of the times and won't lend to the public.

But lo! here are the life companies paying full dividends to their shareholders as usual, paying, in many cases, increased dividends in cash to their policyholders.

There hasn't been a failure of any life company here and there won't be, because there can't be. The life insurance interests are too safely guarded by their own powerful financial reserves and by the Ottawa authorities.

There hasn't been a case where a life company has had to refuse to pay a claim because it couldn't. There hasn't been a single instance where a company has had to delay payment a single day because it hadn't the money. There hasn't been a case where a policyholder has been refused a loan on his policy because the company didn't have the coin. And there won't be.

But because in these historic times a company has not done so much as it wanted to do, we get black faces and as many growls and grumbles as you would expect if someone had robbed the company's coffers of a few hundred thousand bucks or the Insurance Departments had insisted on the licensing of general managers at a yearly fee of 50 cents.

Instead of the head offices pointing with pride to the fact that in the world's greatest crisis their business has suffered less than any other business in the world. Instead of the head offices pointing out that when nearly all financial institutions had failed the public the life companies have come to the rescue with their loans on policies. Instead of pointing out that when the thousands of husbands had died in Canada last year the life policy has been almost the only thing to supply ready cash, although the estate may be a multi-millionaire one.

Here we have them snorting and weeping almost because the public has taken smaller policies than usual and a few of the thriftless have let their policies lapse.

I say that to-day the life insurance business is the most flourishing in the world. I go further, and say that if things become worse commercially, that, compared to other businesses, life insurance will be relatively more flourishing still.

Our life insurance is the strongest business in the world. It has not the weaknesses of the banks, subject to "runs" at any moment's notice. It has not, like them, to keep a very big proportion of its assets liquid in times of stress. It is, to my mind, the completest and most powerful financial organization the world can possess. World wars cannot disrupt it or cause it to so rearrange its policy that it will offend the public.

So I guess we want a little more brilliance from the head office to-day. It would do much good to the business if the presidents of all our big companies would make these forcible points in their annual speeches, now about due.

I guess life companies are just now like a man from Saskatoon. This gink had made a few hundred thousand dollars by 1912 in real estate.

"Lucky guy!" said an acquaintance to him.

"Lucky," snorted the Sasakatoonian.

"Lucky! did you say? Why I've lost more money than any man in this city."

"You don't say so," said the acquaintance to him. "How is that?"

"You see that next block," said the complainer. "Well I bought that for $50,000 and sold it for only $100,000. Next day it was resold for $160,000. I lost $60,000 in that one deal alone!"

I guess the life companies are like that Saskatoon loser. I guess they ought to continue losing like that for many years yet without grumbling.

Chocolatta

We had a sample package of a new preparation come to our desk the other day and being of an enquiring turn of mind, willing to probe into the merits or demerits of any article which may be sent to us we took it home on trial. We followed the directions on the label which told us to place two teaspoonsful in a cup and pour boiling water thereon. We stirred the liquid for a moment when lo! we had a delicious cup of chocolate ready milked and sugared, the most delicious chocolate we had ever tasted. When we had emptied our cup, we found no chocolate adhering to the sides. The mixture had all dissolved. We were lead to look more fully into this preparation and we find that it has a very high nutrient value. It is of special value for children and is a prime favorite with the young folk. It will, we are sure, solve the difficulties and perplexities of the camper and the picknicker. As a night-cap it will be a delight to many and the best of it is that any child can prepare a cup of chocolatta. We have a vivid recollection of trying to make a cup of chocolate the old way. Suffice it to say that we were convinced that mere man cannot succeed. But with Chocolatta all difficulties vanish. We understand that this is a new preparation just placed on the market. It will make good because it's something that we have been needing and for which we have been anxiously looking.

PUBLIC WELFARE

PRUSSIANISM

You who compel your servants to wear livery, who label them as menials and force them to stand at attention and salute your superior inferiority whenever you speak, you do not command the respect of your slave, to say nothing of his best service.

Of course you can torture him with your conspicuous label. You have the price and he has his price. You think you buy him soul and body, but he keeps some soul in reserve. He needs money, therefore he professes loyalty, but when your face is turned he mimics and scorns you, and if he were as self-besotted as you, he would hate you.

No, you do not count. You are useful, neither physically, mentally, nor ornamentally. You are neither instructive nor interesting. You are simply pitiable in the eyes of all those who make reputations and immortalities. The masses on whose backs you are riding will simply take you as a joke and bye and bye yourself will inevitably see how funny you were.

A person built on your plans and specifications could never keep a true friend, for he would tell you what he thought of you for your soul's sake. If you were treated as you treat your servants, you would start a revolution in ten minutes. I know you do not know any better, but you are missing the real thing in life. You are blind to your own best self. Hear what Walt Mason says:

"We are weary little pilgrims, straying in a world of gloom: just behind us is the cradle, just before us is the tomb; there is nothing much to guide us, or the proper path to mark, as we toddle on our journey, little pilgrims in the dark. And we jostle and we struggle in our feeble, futile wrath, always striving, always reaching, to push others from the path; and the wrangling and the jangling of our peevish voices rise, to the seraphim that watch us through the star-holes in the skies; and they say "The foolish pilgrims! Watch them as they push and shove! They might have a pleasant ramble if their hearts were full of love; if they'd help and cheer each other from the hour that they embark—but they're only blind and erring little pilgrims in the dark."

—Damon.

CANADIAN POETS

XIV.

VIRNA SHEARD

"A study of 'The Miracle and Other Poems' shows at once that the author is not merely a Canadian poet; her outlook and her range know little of time or place; she belongs to the readers of poetry at large. . . . . Though Mrs. Sheard's poems are by no means of uniform quality, there are enough of the best to ensure her a high place in Canadian poetry. Her tender sympathy with small or helpless things, her interpretation of the music of nature, her spiritual quality and her rendering of reverent Biblical subjects reflect the mind of an idealist, and are the inspired lines of one deeply moved. Often there is a touch of sadness or of the whimsical, but never a suggestion of triviality or flippancy. There is little of incident or action: most of the poems are pure lyrics. In many cases there is a strong appeal to the aesthetic."

M. O. Hammond, in The Globe, Toronto.

VIRNA SHEARD, wife of Dr. Charles Sheard, of Toronto, Ont., is a daughter of the late Eldridge Stanton, a descendant of a United Empire Loyalist. Her grandmother was a first cousin of the famous American abolitionist, Wendell Phillips.

Mrs. Sheard was born in Cobourg, Ont., and was educated there and in the City of Toronto. She was married in 1885, and for years devoted most of her time and energy to domestic and social duties. She is the proud mother of four stalwart, talented sons, and is strong in her convic-

tion that the highest, noblest function of a woman is intelligent motherhood.

In 1898, poems and short stories by "Virna Sheard" began to appear in journals and magazines, and since then she has published four novels: "Trevelyan's Little Daughters" (Briggs), 1898; "A Maid of Many Moods" (Copp, Clark Co.), 1902; "By the Queen's Grace" (Briggs), 1904; and "The Man at Lone Lake" (Cassell & Co., Ltd.), 1912.

The novels have merit and were well received, but Mrs. Sheard's fame will likely rest in greater measure on her exquisite lyrics. A collection of these was published in book form by J. M. Dent & Sons, Ltd., in the fall of 1913, under the title, "The Miracle and Other Poems." Of these "In Egypt," the longest and greatest poem in the book, is too lengthy for quotation in full. It is based on the biblical story of Pharoah and his obstinate refusal to deliver the Israelites from bondage, and its dramatic spirit is so admirably sustained throughout, that we should like to see more poems from this author's pen, with mythical and historical themes.

The attention of our readers is directed very specially to the sublime etching in the second stanza of "The Slumber Angel":

His robes are dappled like the moonlit seas,
His hair in waves of silver floats afar;
He weareth lotus-bloom and sweet heartsease,
With tassels of the rustling green fir trees,
As down the dusk he steps from star to star.

IN SOLITUDE

He is not desolate whose ship is sailing
Over the mystery of an unknown sea,
For some great love with faithfulness unfailing
Will light the stars to bear him company.

Out in the silence of the mountain passes,
The heart makes peace and liberty its own—
The wind that blows across the scented grasses
Bringing the balm of sleep—comes not alone.

Beneath the vast illimitable spaces
Where God has set His jewels in array,
A man may pitch his tent in desert places
Yet know that heaven is not so far away.

But in the city—in the lighted city—
Where gilded spires point toward the sky,
And fluttering rags and hunger ask for pity,
Grey Loneliness in cloth-of-gold, goes by.

THE SLUMBER ANGEL

When day is ended, and grey twilight flies
On silent wings across the tired land,
The slumber angel cometh from the skies—
The slumber angel of the peaceful eyes,
And with the scarlet poppies in his hand.

His robes are dappled like the moonlit seas,
His hair in waves of silver floats afar;
He weareth lotus-bloom and sweet heartsease,
With tassels of the rustling green fir trees,
As down the dusk he steps, from star to star.

Above the world he swings his curfew bell,
And sleep falls soft on golden heads and white;
The daisies curl their leaves beneath his spell,
The prisoner who wearies in his cell
Forgets awhile, and dreams throughout the night.

Even so, in peace, comes that great Lord of rest
Who crowneth men with amaranthine flowers;
Who telleth them the truths they have but guessed,
Who giveth them the things they love the best,
Beyond this restless, rocking world of ours.

THE DAISY

An angel found a daisy where it lay
On Heaven's highroad of transparent gold,
And, turning to one near, he said, "I pray,
Tell me what manner of strange bloom I hold.
You came a long, long way—perchance you know
In what far country such fair flowers blow?"

Then spoke the other: "Turn thy radiant face
And gaze with me down purple depth of space.
See, where the stars lie spilled upon the night,
Like amber beads that hold a yellow light.
Note one that burns with faint yet steady glow;
It is the Earth—and there these blossoms grow.
Some little child from that dear, distant land
Hath borne this hither in his dimpled hand."

Still gazed he down. "Ah, friend" he said, "I, too,
Oft crossed the fields at home where daisies grew."

THE SEA-SHELL

Oh, fairy palace of pink and pearl
Frescoed with filigree silver-white,
Down in the silence beneath the sea
God by Himself must have fashioned thee
Just for His own delight!

But no!—For a dumb and shapeless thing
Stirring in darkness its little hour,
Thy walls were built with infinite care,
Thou sea-scented home, so fine and fair,
Perfect—and like a flower!

THE LILY-POND

On this little pool where the sunbeams lie,
This tawny gold ring where the shadows die,
God doth enamel the blue of His sky.

Through the scented dark when the night wind sighs,
He mirrors His stars where the ripples rise,
Till they glitter like prisoned fireflies.

'Tis here that the beryl-green leaves uncurl,
And here the lilies uplift and unfurl
Their golden-lined goblets of carven pearl.

When the grey of the eastern sky turns pink,
Through the silver sedge at the pond's low brink
The little lone field-mouse creeps down to drink.

And creatures to whom only God is kind,
The loveless small things, the slow, and the blind,
Soft steal through the rushes, and comfort find.
Oh, restless the river, restless the sea,
Where the great ships go, and the dead men be!
The lily-pond giveth but peace to me.

THE HARP

Across the wind-swept spaces of the sky
The harp of all the world is hung on high,
And through its shining strings the swallows fly.

The little silver fingers of the rain
Oft touch it softly to a low refrain,
That all day long comes o'er and o'er again.

And when the storms of God above it roll,
The mighty wind awakes its sleeping soul
To songs of wild delight or bitter dole.

And through the quiet night, as faint and far
As melody down-drifted from a star,
Trembles strange music where those harp-strings are.
But only flying words of joy and woe,
Caught from the restless earth-bound souls below,
Over the vibrant wires ebb and flow.

And in the cities that men call their own,
And in the unnamed places, waste and lone,
This harp forever sounds Life's undertone.

THE LONELY ROAD

We used to fear the lonely road
That twisted round the hill;
It dipped down to the river-way,
And passed the haunted mill,
And then crept on, until it reached
The churchyard, green and still.

No pipers ever took that road,
No gipsies, brown and gay;
No shepherds with the gentle flocks,
No loads of scented hay;
No market-waggons jingled by
On any Saturday.

The dogwood there flung wide its stars,
In April, silvery sweet;
The squirrels crossed that path all day
On tiny flying feet;
The wild, brown rabbits knew each turn,
Each shadowy safe retreat.

And there the golden-belted bee
Sang his sweet summer song,
The crickets chirped there to the moon
With steady note and strong;
Till cold and silence wrapped them round
When autumn nights grew long.

But, oh! they brought the lonely dead
Along that quiet way,
With strange procession, dark and slow,
On sunny days and grey;
We used to watch them, wonder-eyed,
Nor cared again to play.

And we forgot each merry jest;
The birds on bush and tree
Silenced the song within their throats
And with us watched to see,
The soft, slow passing out of sight
Of that dark mystery.

. . . . . .

We fear no more the lonely road
That winds around the hill;
Far from the busy world's highway
And the gods' slow-grinding mill;
It only seems a peaceful path,
Pleasant, and green, and still.

CLOSING STANZAS OF 'IN EGYPT'

O When the desert blossomed like a mystic silver rose,
And the moon shone on the palace, deep guarded to the gate,
And softly touched the lowly homes fast barred against their foes,
And lit the faces hewn of stone, that seemed to watch and wait—

There came a cry—a rending cry—upon the quivering air,
The sudden wild lamenting of a nation in its pain,
For the first-born sons of Egypt, the young, the strong, the fair—
Had fallen into dreamless sleep—and would not wake again.

And within the palace tower the little prince slept well,
His head upon his mother's heart, that knew no more alarms;
For at the midnight hour—O most sweet and strange to tell—
She too slept deeply as the child close folded in her arms.

Hard through the city rode the king, unarmed, unhelmeted,
Toward the land he loaned his bondsmen, the country kept in peace;
He swayed upon his saddle, and he looked as looked the dead—
The people stared and wondered though their weeping did not cease.

On did he ride to Goshen, and he called "Arise! Arise!

Thou leader of the Israelites, 'tis I who
bid you go!
Take thou these people hence, before the
sun hath lit the skies:—
Get thee beyond the border of this land
of death and woe!"

Across the plains of Egypt through the
shadows of the night
Came the sound as of an army moving
onward steadily,
And their leader read his way by the
stars' eternal light
While all the legions followed on their
journey to the sea.

. . . . . .

The moon that shineth overhead once saw
these mysteries—
And then the world was young, that
hath these many years been old;
If Egypt drank her bitter cup down even
to the lees
Who careth now? 'Tis but an ancient
tale that hath been told.

Yet still we hear the footsteps—as he
goeth to and fro—
Of Azrael, the Angel, that the Lord God
sent below,
To Egypt—long ago.

GULLS

When the mist drives past and the wind
blows high,
And the harbor lights are dim—
See where they circle, and dip and fly,
The grey free-lances of wind and sky,
To the water's distant rim!

Like spirits possessed of a fierce delight,
A courage that cannot fail,
They face the breakers—they face the
night—
The mad storm-horses are silvery white,
They ride through the bitter gale!

They seem like the souls of the long, long
lost,
Who breasted the ocean-main—
Vikings whose vessels were tempest-tossed,
Voyagers who sailed, whatever the cost,
And never came home again.

Or stranger and wilder fancy—it seems
As I hear their wind-torn cry,
No birds fly there through the sun's last
gleams,
But the wraiths of hopes—the ghosts of
dreams
That the old sea-gods saw die.

When the mist drives past and the wind
blow high,
And the harbor lights are dim—
See where they circle, and dip and fly,
The grey free-lances of wind and sky,
To the far horizon's rim.

THE TEMPLE

Enter the temple beautiful! The house
not made with hands!
Rain-washed and green, wind-swept and
clean,
Beneath the blue it stands,
And no cathedral anywhere
Seemeth so holy or so fair.

It hath no heavy gabled roof, no door with
lock and key,
No window-bars shut out the stars,
The aisles are wide and free—
Here through the night each altar-light
Is but a moon-beam, silver-white.

Silently as the temple grew at Solomon's
command,
Still as things seem within a dream
This rose from out the land:
And all the pillars, grey and high,
Lifted their arches to the sky.

Here is the perfume of the leaves, the in-
cense of the pines—
The magic scent that hath been pent
Within the tangled vines:
No censer filled with spices rare
E'er swung such sweetness on the air.

And all the golden gloom of it holdeth no
haunting fear,
For it is blessed, and giveth rest
To those who enter here—
Here in the evening—who can know
But God Himself walks to and fro!

And music past all mastering within the
chancel rings;
None could desire a sweeter choir
Than this—that soars and sings,
Till far the scented shadows creep—
And quiet darkness bringeth sleep.

CANADIAN MEDICAL ASSOCIATION

THE Committee of Arrangements announces that the annual meeting of the Canadian Medical Association which, it was expected would be held in Vancouver, July 6, 7, 8 and 9, has been postponed until after the termination of the war.

The number of Canadian practitioners either in, or contemplating active service abroad, has made this step imperative, and after receiving innumerable letters from all over Canada, suggesting this action, it was finally decided upon.

It is expected that the next meeting will be held in Vancouver, as soon as practicable after the declaration of peace, the definite dates of which will be announced later.

POSTPONED CONVENTION

The Canadian Association for the Prevention of Tuberculosis, which was to have held its 15th Annual Convention in Vancouver on July 5th and 6th, has postponed the meeting for another year.

ONTARIO HEALTH OFFICERS' ASSOCIATION FOURTH ANNUAL CONFERENCE

PETERBOROUGH, MAY 25th and 26th, 1915

FIRST SESSION.

.. 10.30 a.m., Tuesday.

Registration of Delegates.

11.00 a.m.

"County Sanatoria."—James McQueen, M.O.H., Freelton.

"The Early Signs of Tuberculosis."—J. H. Holbrook, Superintendent Mountain Sanatorium, Hamilton.

"Tuberculosis Problems from a Public Health Standpoint."—D. A. Craig, Superintendent Queen Alexandra Sanatorium, London.

"Pasteurized Milk."—J. Race, Bacteriologist, Local Board of Health, Ottawa.

General Discussion.

Question Drawer.—Answers by John A. Amyot and J. W. S. McCullough.

SECOND SESSION

2.30 p.m.

President's Address.—W. R. Hall, M.O.H., Chatham.

"The Problem of Measles."—A. Dalton Smith, M.O.H., Mitchell.

"Anti-Typhoid Vaccination."—F. W. Schofield, Toronto.

"Diphtheria, Its Dissemination, Prevention and Cure."—J. F. Hanly, M.O.H., Almonte.

"Methods of Disposing of Domestic Wastes in Municipalities Without a Sewerage System."—F. A. Dallyn, Provincial Sanitary Engineer.

General Discussion.

Question Drawer.—Answers by John A. Amyot and J. W. S. McCullough.

THIRD SESSION.

8.30 p.m.

Public Meeting.

Provincial Board of Health Moving Pictures.—E. H. Jones.

"Rational Position of the Food Question."—H. D. Pease, Lederle Laboratory, New York City.

FOURTH SESSION

10.00 a.m., Wednesday.

"How Shall We Enforce a Better Observance of 'Quarantine.'"—C. N. Laurie, M.O.H., Port Arthur.

"Health Problems in Small Towns and Their Solution."—J. W. Shaw, M.O.H., Clinton.

"How Can the Health Officer Secure Co-operation of the Residents of His Municipality?"—E. B. Oliver, M.O.H., Fort William.

"Some of the Troubles of a Rural Medical Officer of Health and Their Remedy."—M. Powers M.O.H., Rockland.

"Sanitary Conditions in Rural Schools."—Thomas J. McNally, District Officer of Health.

General Discussion.

Question Drawer.—Answers by John A. Amyot and J. W. S. McCullough.

FIFTH SESSION

2.30 p.m.

Nomination of Committees.

"Improvements Made in Public Health Matters in Owen Sound since Establishment of District Officers of Health System."—H. G. Murray, M.O.H., Owen Sound.

"The Prevention of Insanity."—J. Gerald Fitzgerald, Associate Professor of Hygiene, University of Toronto.

"Abnormal Mental Conditions in Children and Their Treatment."—Adam H. Wright, Toronto.

"Sanitary Diagnosis of my Constituency."—G. R. Cruickshank, M.O.H., Windsor.

General Discussion.

Business Meeting, Election of Officers, etc.

Academy of Medicine, Toronto

Section of State Medicine

CANCER is one topic upon which discussion and teaching are always welcome. So many are victims of this disease and go past the line of curability before they are made aware of it, that a more general Educational Campaign must be inaugurated in the near future. Early diagnosis of Cancer is all-important. Therein lies the possibility of Cure. Little symptoms which the ordinary woman disregards may be danger signals. The Section of State Medicine has done well in giving an evening to a discussion of this subject in all its aspects. At the March 25th meeting the following programme was presented:

1. *What the Physician can do towards the Prevention of Cancer—Dr. Graham Chambers.*
2. *The Attitude of the Surgeon—Dr. H. A. Bruce and Dr. A. Primrose.*
3. *The Attitude of the Gynaecologist—Dr. F. A. Cleland.*
4. *The Attitude of the Pathologist—Dr. J. J. Mackenzie.*
5. *The Public Health Aspect of Cancer—Dr. C. J. O. Hastings.*

THE SOCIAL ASPECTS OF MEDICINE

By DR. FRANKLIN JOHNSON, Jr.

Director of the Department of Social Service, University of Toronto.

ONE of the most fundamental and far reaching factors in modern social life is the work of the physician. Our present era is marked by the development of nationality and the conflict between rival nations, which is chiefly due to the increasing pressure of population against the resources and limits of the different countries. In the year 1750, according to Mulhall, the population of England numbered only a trifle over six millions and other countries were in proportion. The enormous growth since that period with the profound resulting changes in all our social life and structure is due chiefly to the advances made in medical science in its broad sense, including hygiene and sanitation. The birth rate in many countries has decreased but so great has been the decrease of the death rate, brought about through the advance of medical knowledge, that it has caused this enormous increase and pressure of population.

From the earliest days of the practice of medicine it has been regarded as a social question, placing social responsibility upon others and having social causes. Among primitive peoples disease was supposed to be caused by some other human being and the cure for the illness consisted in discovering the person responsible and then dealing properly with that person. Later in the development of primitive peoples disease was supposed to have supernatural and mysterious origin and the cure consisted in placating the forces of nature or supernatural beings. Still later came the commencement of the modern scientific knowledge of sickness

and its causes. With the development of this knowledge has come, however, a reversion back to the primitive and original cause of illness. We now see that the causes of disease must be studied and disease itself prevented not only from the strict therapeutic side but also from the personal and social side.

Social Causes of Disease.

Disease is not an individual question and cannot be dealt with by consideration of the individual alone. In studying the causes of the disease one does not only make laboratory investigations with the culture tube or case studies in the ward or clinic, but it is necessary also to investigate the social environment and setting of the patient and of the disease.

Poverty with its accompanying destitution and improper social conditions, leads directly to disease. Lack of proper food, insufficient clothing and the other surroundings of poverty are important factors in the morbidity and death rate. Modern social work is very largely concerned to-day with the question of the standard of living. This social fact is also equally important for the physician. A low and insufficient standard of living means increase in sickness.

Poor food and mal-nutrition means mathematically that a large per cent. of people will suffer from illness. Increased standards of living and more adequate food and clothing mean decreased illness and decreased mortality.

Whatever affects the cost of living forms a social question for the social expert and also a medical question for the physician. One of the factors affecting this is low wages and every physician should have some general knowledge as to the sufficiency or insufficiency of wages in his district, and should have a definite opinion, for example, either for or against such questions as the minimum wage. The high cost of living not only comes within the sphere of the social expert and the economist, but also specifically enters into the realm of medical work.

Another of the social causes of disease is found in housing. Bad housing conditions, including either overcongestion in the house or over-crowding of houses upon the land, result mathematically in increased sickness and mortality. To illustrate this the following two tables will be of interest:—

London.

Death Rate for more than 2 in a room.

Per Cent. in District	Death Rate per 1000	Tuberculosis Death Rate per 1000
0-10	14.5	1.26
10-15	16.2	1.52
15-20	18.1	1.64
20-25	19.0	2.06
25-30	20.9	2.27
30-up	21.0	2.13

Manchester.

Death Rate for back to back houses.

Per Cent. in District.	Death rate All causes per 1000	Infectious Death rate per 1000	Tuberculosis Death rate per 1000
0%	27.5	4.5	2.8
56	30.5	6.2	3.6
100	38.4	8.7	5.2

From the first of these tables it appears that overcrowding of people within the house results proportionately in an increase of the death rate. It also results in an increase of the tuberculosis death rate but it will be noticed that the increase of the total death rate is far greater than the increase due to tuberculosis alone, showing that increased mortality is due to general increase all along the line.

The second table shows the result of overcrowding of houses upon the land, leaving insufficient space between them. In this table is shown the total death rate due to infectious diseases and that due to tuberculosis. It will be seen again that the increased death rate is due not only to the increase of tuberculosis or to infectious diseases as a whole, but is due to general increase of deaths and mortality.

Infant mortality also must be handled not only from the strict medical side but also with a view to its social causes. In Milwaukee there are two wards, both having practically the same population, one a slum ward, the other an aristocratic ward. The first has an infant mortality rate nearly 250% higher.

In the city of Erfurt, Germany, of 1,000 children in the rich classes there were 89 deaths, for the middle classes, 173 deaths, for the working classes, 505 deaths.

The difference between the infant mortality rate in the city and the country is very striking also as shown by the following table:—

Registration Area of United States.

Death Per 1,000 Under Five Years.

	Cities.	Rural.
Aggregate	57.6	34.4
White	54.8	34.
Foreign	36.8	27.1
Colored	123.6	67.

The New York City Health Department some years ago, gave as reasons for the heavy decrease in infant mortality in that city:—

(a) Better milk including pasteurization, and education in regard to food.

(b) Opening of small parks.

(c) Cleaner streets.

(d) A floating hospital for children.

General unsanitary conditions, both prenatal and post-natal, affect the infant mortality rate immediately. The prevention of infant mortality must include not only strict medical measures but also such things as parental education, regulation of employment of married women, prevention of overcrowding, municipal campaigns against infant mortality, and so on.

Classes and trades also must be included in examining the social causes of deaths. One's prospect of health depends upon his class in life and upon the occupation which he follows, as shown by the tables given below. It will be seen that the banker beside being blessed with money is also rewarded with a low death rate, while the servant within his house has to pay the penalty of an enormously increased rate, and the marble cutter who prepares the tomb stones for others also is working on his own.

United States.

Deaths Per 1,000 For Classes and Trades.

Mercantile class	12.
Clerical employments	13.1/5
Professional classes	15.1/3
Working and servant classes	20.2

United States.

Tuberculosis Death Rate Per 100,000

For Occupations.

Bankers and Brokers	92.
Agriculture and Outdoor	147.2
Mercantile	165.8
Servants	430.
Cigar-makers	476.9
Marble and stone cutters	540.5

Social Treatment of Disease.

The science of hygiene means personal care. It should also be developed to include industrial and social care. The study of tuberculosis is not only a study of the tubercle bacillus but also a study of factory conditions, of the market price of provisions, of housing and many other things. The handling of tuberculosis concerns the department of health, the department of building, the department of street cleaning, the department of education and others as well, in order most effectively to co-ordinate the different agencies concerned.

Having seen that the social environment of the patient and the social location of the disease are both factors of the greatest importance, it becomes evident why the treatment of disease has expanded in modern medical science to include these social causes. A large part of the work of the board of health of a modern city is social in this sense of the word. As preventative medicine has developed it has entered more and more into what would formerly have been called the social sphere as distinct from the medical sphere, which two fields are now seen to be closely interlinked. The future progress of hygiene and sanitation will probably lie largely in this direction. Such things as small parks, city playgrounds, and cleaner streets are seen to be not only of social importance as affecting the social and civic welfare of a community, but also of medical importance as affecting the health of the community.

Apart from this aspect of the subject there has been a marked development in the last ten years of social treatment linked with medical in connection with hospitals and dispensaries. The so called "medical social service" has developed with great rapidity since 1905 and most of the leading hospitals are availing themselves of it. The movement had its origin not in the social requirements but the medical requirements of the situation, and it was the physician who requested the social expert to join him in the work. This movement is leading to a widening and change in the conception of the work of the modern hospital. Dr. Davis, the head

of the Boston Dispensary, one of the leaders in this work, says.

"Medical institutions—hospitals and out patients departments—are in the transitional stage between the old type of work and the newer type which treats not only 'cases' but the social relations of disease." Or to quote again,

"It is not enough that we relieve suffering, give medicine and cure an existing illness, modern medicine and modern social science alike set a further goal. We must relieve as far as possible the conditions of poverty or industrial maladjustment which are two of the chief causes of disease."

The annual report of one of the greatest hospitals of the country says.

"As a by-product of its daily work of dealing with sickness, a medical institution may be, indeed should be, a civic force."

The social treatment of disease is extending in medical importance in the view of the physician. A recent annual report of the Boston Dispensary, which handles not far from 50,000 cases a year in its out patient departments, says in regard to this work.

"The admission problem is only incidentally a medical one. It is fundamentally social. We want from the admission desk a social classification of patients. It thus makes possible a beginning at an intelligent plan for his treatment."

The allied Children's Hospital in Boston requires that the case of every child admitted into the hospital shall be investigated by a social worker and a social diagnosis returned before the medical diagnosis is made except in emergency cases such as accident or acute and infectious disease. This social diagnosis is made in practically every case within twenty-four hours. It has long been recognized that the work of a mental clinic cannot be satisfactorily performed without the co-operation of the social worker, and in the Philadelphia Psychological Clinic, which is the leading one of its kind upon the continent, a complete social record and diagnosis is required as the accompaniment of the mental diagnosis.

The growing recognition of the importance of at least some social knowledge for the physician led Dr. Charles P. Emerson, a number of years ago, to make arrangements whereby the students of the Medical School of Johns Hopkins University were afforded an opportunity of becoming acquainted in some measure with social work and conditions, a large and increasing number of students availing themselves of this. In 1913 the Harvard Medical School instituted the requirement, through Dr. David L. Edsall, that all of the fourth year medical students should attend certain lectures covering social work, not as a matter of option, but as a matter of requirement. These two medical schools are recognized as two of the five leading medical schools of the continent.

This same movement is also reaching through the physicians to the nurses. The Massachusetts General Hospital has associated its training school with the Boston School for Social Workers, and Miss Parsons the Superintendent of Nurses as well as Dr. Richard C. Cabot both state that the instruction in social work thus given to the nurses is of the greatest value and importance, and is furthermore raising the grade of women who enter the nursing profession through that institution. Bellevue Hospital in New York last year entered into an arrangement with the New York School of Philanthropy by which its senior class of nurses take not only one course but the entire year's work of that institution, the authorities of their training school feeling that the value of this instruction is sufficiently great to warrant displacing a large part of the third year class room work and training in the hospital training school. Several hospitals in Toronto have also availed themselves of the opening of the school of social work of the University of Toronto to give their senior class the benefit of certain selected courses, among them being the Toronto General Hospital, Grace Hospital, thus showing that the medical profession and the hospital training schools in Toronto are abreast of other great cities such as Boston, New York, etc.

The further development of medical social service will very probably, in the opinion of the writer, lead to physicians of large and extensive practice employing trained social workers in their individual practice.

In considering the aspects of social treatment of disease, one should also refer to the great movement of sickness insurance, as represented in England by the

Insurance Act of 1911 commonly associated with the name of Lloyd George. Despite criticism of a few minor details, this law provides a broad and comprehensive plan for the adequate handling of much of the social problem of sickness. It renders available for all those affected by its provisions the immediate medical care of a physician, no matter how poor the patient. It affords financial aid imperatively demanded for the poor wage earner during his illness. In some form sickness insurance has been adopted by practically every European nation, including even Roumania and Servia. It should receive the careful attention and consideration of every physician on this side of the water.

The Social Result of Disease.

In the beginning of the consideration of the subject it was seen that poverty and destitution led to disease. Insufficient food, inadequate clothing, bad housing, and all the conditions which usually accompany poverty, lead directly to increase of disease of all kinds, and to a higher death rate. On the other hand, the reverse is also true. Disease leads to poverty and destitution. These two factors unite to form a vicious circle, each being cause and each being effect, sickness causing poverty, poverty in turn causing sickness, this then leading to further poverty, and so on. In estimating the burden of sickness in human life one must not only consider the pain and suffering caused by it, the physicial deterioration and other similar results, but also the social consequences.

One of the greatest single causes of destitution is disease, a fact which is not often appreciated by either the physician, the statesman, or even the social expert who has not spent much time in close contact with destitution or who has not given attention to the results of investigation. Sidney and Beatrice Webb say, in their "Prevention of Destitution,"

"We are apt to forget that in all countries, at all ages, it is sickness to which the greatest bulk of destitution is immediately due."

Dr. Edward T. Devine, who has perhaps the widest experience and speaks with the greatest knowledge upon this subject of any authority, says, in "Misery and Its Causes," giving many concrete examples of the fact.

"Ill health is perhaps the most constant of the attendants of poverty. It has been customary to say that 25 per cent of the distress known to charitable societies is caused by sickness. An inquiry into the physical condition of the members of the families that ask for aid clearly indicates that physicial disability is at any rate a very serious disabling condition at the time of application in three quarters —not one quarter—of all the families that come under the care of the (New York) Charity Organization Society."

The money expense and loss due to sickness can only be estimated, as there are no accurate statistics available for this continent, or indeed for England or Europe, though there they are better worked out. Dr. George M. Kober in the White House Conference of Governors in 1908 estimated the typhoid cost of the United States per annum at $350,000,000. Dr. L. O. Howard in his report to the American Conservation Commission estimated that malaria cost the United States annually $100,000,000, and insect diseases generally $200,000,000. Dr. Irving Fisher estimates that the U. S. annual cost of tuberculosis, including loss of earnings and potential earnings, is over one billion dollars.

From these figures, the estimate becomes credible made by Dr. Fisher in his Report on National Vitality that the total financial burden of sickness including loss of wages amounts to two billion ($2,000,000,000) dollars a year for the U. S. Both higher and lower estimates have been made, this being about a mean. It will be remembered that the larger proportion of sickness and its burden falls upon the poor and those living below the proper standard for efficient living. It will be appreciated then what an enormous load it places upon them to wring from them each year a money toll as large as the total capitalization of two United States Steel Corporations which has the largest capitalization of any corporation in all human history. To make these figures somewhat more individual, the U. S. Bureau of Labor found after investigation some years ago that the average cash expenditure of working men's families for sickness each year was $26.78. This did not

include loss of wages. Fisher estimates the total average family burden from sickness at $110 per year, including loss of wages.

The number of those sick is also surprising when the estimates are first examined. Fisher places the number of seriously sick at any one time, or all the time, in the U. S., as three million. A later estimate made in 1910 places the total sickness among wage earners at 13,400,000 each year.

This last consideration leads to another aspect of the case. Sickness is also of paramount importance in regard to the question of unemployment. The figure last given means that thirteen and a half million wage earners were forced out of employment each year through sickness in the U. S. The average time of this unemployment was estimated in the same report presented to the President in 1910 at eight and a half days per person each year for all workers in the country. The Bureau of Labor at another time estimated that not far from one quarter of the heads of families were idle three weeks or more each year through sickness, among working men.

It appears correct then to say that in the long run, through a period of years, more workers are forced out of employment through sickness than through any other single cause. In times of great commercial depression with extreme unemployment which strikes the public attention forcibly, the volume of steady constant unemployment tends to be lost sight of, more especially as it is for a shorter time and so does not occasion the same extreme height of distress. It does, however, tend more surely to force families into permanent destitution.

Careful budget investigations made by many different authorities show that only from a quarter to a half of all workingmen's families are able to lay up any savings at the end of a year. A surplus in their accounts is becoming a rare phenomenon. Where they do manage to effect a saving, it averages only something like $15 at the end of the year's effort. The financial burden and loss of sickness will throw such a family into a condition of poverty and accompanying destitution. In many cases this becomes permanent and is not recovered from, and the family is forced to become recipients of public or private charity from time to time. This is often the result also from the weakening of the wage earner and the lessening of his earning power and the family income, after he has returned to work once more.

Social and industrial conditions in Canada and the United States are roughly speaking similar, and these figures will apply to Canadian conditions sufficiently to indicate the corresponding state of things among Canadian workers, while the totals can be estimated roughly by dividing the American figures by the difference in population.

The physician then is doing far more than handling and healing the physical ills of the people. He also carries the responsibility of one of the heaviest social burdens, while social conditions in turn place on his back a large part of the load which he is carrying. The social expert looks to medical science for assistance in this section of his work, while the physician is also turning to the social worker in turn for the benefit of his knowledge and co-operation, each finding the other necessary. As medical schools and physicians recognize the interlinking of medical science and social science and enter with interest and intelligence into the latter, the follower of social science acknowledges what the physician has done for it in the past, and foresees with pleasure what will be accomplished in the future.

THE RELATION OF PREVENTABLE SICKNESS TO POVERTY

By PROF. G. I. H. LLOYD,
Dept. of Economics, University of Toronto.

POVERTY and wealth are terms of elastic significance. Usually when we employ them we think only of individual wealth as measured by a monetary value, and this usage answers well enough in the ordinary economic life of men. It is, however, only the week day definition, and when our minds are set to

contemplate deeper realities we recognize its limitation and inadequacy. For, as Ruskin taught, there is in the last resort no wealth except life, and sickness is thus one of the most fundamental aspects of poverty.

At a time like the present, men's thoughts are inevitably led to recognize this contrast between mere individual riches and social or national wealth. As we contemplate the desperate trial of strength between allied groups of nations now taking place on the battlefields of Europe, we realize that the monetary wealth of individual citizens has but a minor influence on the outcome, and that it is the intensity of national life that will in the long run determine the issue of the struggle. National wealth, and indeed all wealth, must in the ultimate analysis be interpreted in terms of life.

As with wealth, so with poverty. We are coming more and more to recognize the fact that poverty is the mark, not merely of individual shortcoming, but of social and national failure; that it entails not merely individual suffering, but also national loss; that no one can be poor, and no one can be sick, without detracting from the well-being of his fellows. To consider the individual in isolation is in fact to overlook the fundamental fact of social solidarity and interdependence, and no fundamental remedy for any social ill can spring from a narrowly individualistic view of society.

The radical transformation that has taken place during the past century in the attitude of philanthropists towards the problem of poverty is due mainly to precisely this shifting of the emphasis from the individual to the social significance of the disease. This is clearly seen in the writings of the leading authorities on the subject. In 1806 Dr. P. Colquhoun, the author of a remarkable book, called "A Treatise on Indigence," summarized the result of a very elaborate analysis of the problem of poverty in his day by attributing the evil almost exclusively to personal failing. "The class whose indigence arises from culpable causes," he writes, "comprises perhaps three-fourths part of the adult population of paupers." So again, in the report of the great Poor Law Commission of 1834, the most important social investigation ever undertaken up to that time, we find it stated as the considered opinion of the commissioners that "wherever inquiries have been made it has been found that the pauperism of the greater number has originated in indigence, improvidence or vice, and can be averted by ordinary care and prudence." This conclusion naturally suggested a negative policy of repression rather than an effort to grapple with the question constructively. The fundamental maxim laid down was that "the situation of the dependent poor shall not be made so eligible as the situation of the independent laborer of the lowest class."

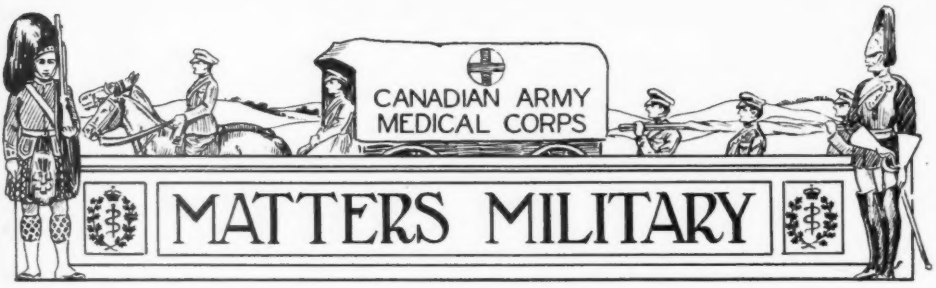
Without criticizing this policy, which may indeed have been in accord with the needs of that time, let us briefly contrast it with the attitude of the Poor Law Commission of 1909. Here we find a large proportion of the report devoted to a careful analysis of social causes of poverty, such as sickness, trade cycles, bad labor organization, the exploitation of boy labor, casual employment, lack of machinery for industrial training, and so forth. The theory that poverty is simply due to personal deficiency is tacitly but completely abondoned, and instead of "deterrent" remedies we find elaborate, constructive, social remedies are proposed, based on "preventive," "remedial" and "restorative" principles. The modern analysis of poverty has thus come to lay emphasis on the innocent rather than on the culpable aspects of the problem, to recognize the social nature of the disease, and to seek for constructive social remedies.

Among the social causes of poverty none is of more importance than preventable sickness. So far as it is possible to diminish sickness by measures for increasing the healthfulness of the environment of the individual, the result will be to diminish poverty and increase the real wealth of all classes of the community. Herein we see the important part that must be played by preventive medicine, and also the need for its intimate correlation with all other agencies working for social betterment. It is through preventive medicine that the environment of the individual can be most directly influenced for good.

The main reforms to be secured are simple and elementary—pure milk, pure water, pure air—these three objects alone if they could be fully attained would have a profound influence on social well-being. It must be borne in mind that not less than one-half of the total burden of indigence has been shown to be due to sicknesses which are preventable by simple sanitary precautions. When we look back at the fine record of sanitary improvement in the past, and when we realize the close relation of this improvement in health to the well-being of the population at large, when, in short, we realize that wealth and health are not two but one and the same thing, then perhaps we shall be willing to carry out the necessary reforms. Even so the task will not be easy. It cannot be done simply by a few officials; for public regulations are useless and even hurtful unless supported and endorsed by popular intelligence and recognition. Thus the education of the public must play a large part in any campaign for the promotion of such a programme of improvement.

Most modern reformers will agree with the great stress here laid on the improvement of the environment, but there are some who, on biological grounds, would challenge the soundness of these views. Thus it is objected, that since, according to biological doctrine, "acquired characteristics" are not transmissible, any plan of social betterment based on alteration in the human environment must necessarily be futile. This demands consideration. The question is a formidable and straightforward one—is social reform to be written down as impracticable merely because social reformers can only influence environment, and must we concentrate our efforts on the improvement of the racial quality by means of eugenics to the exclusion of all broader social aims. Let us see. First of all we may note that the biologist has little of a positive character to tell us. He helps us to recognize the characteristics of inherited unfitness, but not those of fitness. We understand the transmission of biological defects, but not of excellencies. Thus biology can at best give us a policy of repression rather than one of constructive selection. But our reply may go further. Although it may be true in a biological sense that the influence of environment is negligible, yet in a social sense it is not true. It proves too much, since admittedly environment does influence the life and conduct of the individual, and the characteristics of environment are just as truly inherited as are the fundamental characteristics of racial quality. Thus social organization, medical skill, philanthropy are themselves heritable and self-perpetrating. All that goes to make up a standard of life, constitutes the essential foundation of social inheritance, and to my mind this social inheritance is at least as important as biological inheritance, for through it the attainments of the parents, acquired capacities, material and moral advantages, are passed on in an ever increasing and cumulative measure to their offspring, and such intellectual and moral inheritance is of far greater importance than the material wealth which accompanies it. Any improvement in environment is thus likely to realize a prominent social improvement, whatever may be the outcome of the great biological controversy as to the transmission of acquired characteristics.

We see then that preventable bodily sickness is but one form of social sickness, or poverty. But there is just as little reason to accept fatalistic conclusions about the presence of poverty in human communities as there is to adopt the same attitude towards (say) tuberculosis. The elimination of tuberculosis demands elaborate social organization, but no one doubts that the goal is attainable. If, however, it is possible in the case of one primary cause of poverty it must be possible with all. We have as yet hardly realized not only what is ultimately possible, but even what is immediately attainable, as soon as there is a general consent that the necessary effort is worth the cost. In the social organization of the future we cannot doubt that co-ordinated effort along a large number of converging lines—movements for better housing, for remedying unemployment, for increasing temperance, for promoting thrift, and so on, all working hand in hand with preventive medicine, will go a long way in the direction of abolishing poverty as we now know it.



INOCULATION AND TYPHOID FEVER

By HARRY MOREL,

Captain Canadian Army Medical Corps
In charge Inoculation Depot, Tidworth Barracks, England.

OF the many and varied problems which confront the Medical branch of armies, the health of each individual soldier in the most vital, for without health the vast modern armies of the present day could not exist.

As an example of the remarkable changes which have taken place in preventative medicine, nothing approaches the progress which followed the innoculation against that Scourge of Armies, Typhoid Fever, which has been aptly called the "Soldier's Worst Enemy."

We know typhoid fever appears and is found wherever there is overcrowding, underfeeding, improper clothing, exposure and bad sanitation, any or all these may exist in armies in the field, and taken together with the bacillus of Eberth, we have the cause and conditions present to produce typhoid and those far-reaching consequences which have a strong influence over the strength and fighting power of an army.

A large proportion of the British Expeditionary Force in France were immuniated against typhoid and it was due to this that:

"The sick rate of the British troops is only 3 per cent., and of the Indian troops slightly less. This is a lower rate than in some of our home garrisons, and speaks volumes for the efficiency of the control and for the discipline of the army."

As stated in a report on the Health of the British Army:

"Sickness is more dangerous than the enemy. In this campaign we have hitherto defeated both. But as between germs and Germans, the former remain the more dangerous foe."

It is a well known fact that in the Boer war, more died of typhoid fever than all other diseases combined, and this disease also was responsible for many more deaths than bullets. The same state existed in the Spanish-American war. In fact, during three years of the Boer campaign, there were nearly sixty thousand cases of typhoid fever in the three years—this means twenty thousand cases in a single year. Leaving all considerations of the impairment of the fighting capacity of sixty thousand men alone, who can compute the financial loss? Why the nursing and other expenses would be enormous. To-day we have the means at our disposal to prevent almost every case. We might quote the experiences of the French army now in the field. In many of the French regiments belonging to the Territorials an epidemic of typhoid fever broke out, it was found that these troops were not immunized against the fever, steps were at once taken to vaccinate every man, with the result that within a short period, the epidemic was stamped out. At the present time all French battalions, whether at the front or at the depots, have been injected with anti-typhoid serum, such is the faith of the French army surgeons.

The Director-General of Medical Services of Australia states that the men composing the contingent, which were about twenty thousand, were inoculated against typhoid fever while on transports, and notwithstanding the large number of vaccinations not a single case showed any after-symptoms which could be considered worthy of consideration.

It is also stated that the moral effect it had on all ranks was most marked. Men realized that every precaution had been taken to ensure them against a disease more deadly than a German rifle bullet, and they also felt that they could go anywhere where duty might call them, confident that they were not then a source of danger to their comrades, which they distinctly and clearly understood was the condition prior to innoculation.

In Canada also every precaution was taken before the First Canadian Expeditionary Force left its home shores, and at the concentration camp at Valcartier, Quebec, almost twenty-seven thousand men were inoculated with anti-typhoid serum; this required fifty-four thousand injections, and notwithstanding this large number, the largest on record, there were no cases of severe constitutional reaction nor infected arms.

All this testimony goes to show that the medical authorities and army surgeons place the greatest reliance on the effect of anti-typhoid serum. A great many of the Belgian soldiers were not rendered immune to typhoid fever at the commencement of hostilities; possibly this was due to the army taking the field before any proper precautions could be taken; however, typhoid did not make its appearance during the first three months of the war, very likely the absence of very hot weather and the heavy rains may have had something to do with keeping down the sources of infection, but naturally the disease began to show itself as time went on and every condition was present for the development of typhoid fever, this culminated in a severe epidemic at the Base Hospital Calais.

The British army in the field at this same time enjoyed immunity from one of the traditional plagues of war, the credit of which may be divided between the splendid sanitary and commissariat arrangements and anti-typhoid inoculation.

Going still further as to the protection afforded by typhoid inoculation, we quote Sir Frederick Treves, who stated: "Not a single man of the Expeditionary Force protected by inoculation had died of typhoid fever, and those who attempted to persuade the soldiers not to be inoculated played into the hands of the enemy."

In spite of all this testimony given as to the remarkable immunity enjoyed by those who have been vaccinated against typhoid fever, we are sorry to record that there are still some misguided persons advising against this life saving procedure.

Sir William Osler recently spoke on the health of the soldier and particularly with reference to typhoid fever, which he said "for more than a century had been one of the terrible scourges of armies. He hoped they would not listen to the cranks who were circulating literature against typhoid inoculation. The question at issue was perfectly plain. Were they to be led by a group of misguided cranks, the anti-vaccinationists and anti-vivisectionists, cranks of the very first water, whose literature indicated the profoundest ignorance of everything that had been going on in scientific medicine for 50 years? It was appalling to have to think that people that did not lack intelligence should have ignorance so abysmal as was shown by some of the literature distributed by their societies."

Sir Frederick Treves is perfectly justified in his remarks as follows: In view of this evidence, and in view of the grievous injury inflicted upon our gallant troops by those who—in widely disseminated leaflets—advise the soldier against innoculation, one wonders if the defence of the Realm Act is not suffici-

ently powerful to put a stop to this heartless crusade and this direct playing into the hands of the enemy.

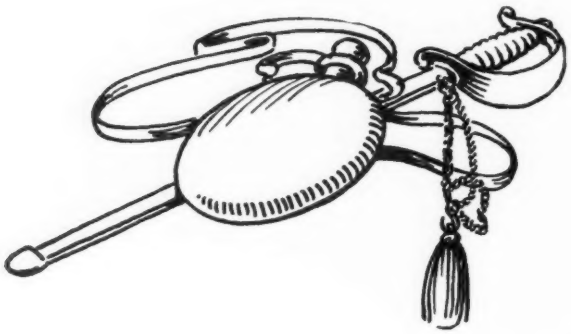
It is unfortunate that anti-typhoid vaccination is not compulsory in the British Army, as it should be. Why should any soldier, simply on account of ignorance or influence be allowed to expose himself and comrades to one of the most latent and insidious diseases known to man, especially where large bodies are collected together.

Still stronger evidence was given as to the value of inoculation, in the House of Commons the other day, as follows:

Of the 421 cases of typhoid in the present campaign among British troops 305 cases were in men who were not inoculated within two years. In the 421 cases there have been 35 deaths. Of these deaths 34 were men who had not been innoculated within two years. Only one death occured among patient's who were inoculated, and that man had only been inoculated once, instead of the proper number of times—namely, twice.

From all these favorable reports it is quite likely that inoculation against typhoid fever will be made compulsory in the British as it has been in the United States army since 1910.

The United States army can show a splendid record, in that not a single case of typhoid fever has occurred in an inoculated man since June, 1912. This includes the troops in Mexico and the large camps in Texas.



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AIR AND VENTILATION

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IN submitting this paper on Air and Ventilation, to the Sanitary Inspectors' Association of Western Canada, I would at the outset, divide my paper into two parts and deal with air and ventilation as two distinct subjects.

Air or Atmosphere.

The word "Air" is derived from the Greek and means literally "to blow," this word is used in such numerous forms in the English language, both as a noun and a verb, that it is necessary to state definitely in what sense it is our intention to use it in this paper; so we will call it the "air we breathe" or the atmosphere surrounding us.

Absolutely pure air is never obtainable in the crowded city or inhabited country side. The composition we call pure air consists of oxygen, nitrogen, watery vapor, with minute percentages of ozone, argon and other more or less innocuous gases. The purest air is obtainable on the mountain top and on the bosom of the ocean.

The atmosphere forms an invisible but none the less very real coating or covering over every square inch of the earth's surface, of an unknown thickness; some authorities estimate the thickness as low as eight miles, while others inform us that the coating is quite 125 miles in thickness; it is within the bounds of reason to accept both estimates as being correct, for in all probability the covering of the earth's surface which we call the atmosphere, and in which we live, is irregular, like the waves of the ocean when lashed by tempest, or like the ripples on the quiet lake; at times this simile may be reversed; the calm being on the mighty ocean while the storm is on the lake; so might it be on the outer surface of the atmosphere surrounding us, in which we live and move and have our being.

Man has seldom ascended into the atmosphere to a greater height than five or six miles, either by mountain climbing or by aerial navigation, owing to scarcity or rarity of air at that altitude, for the air is of the greatest density at sea level, diminishing in density as greater heights are attained, becoming more and more attenuated, until by insensible stages terminating in the vacuum of space.

The atmosphere at sea level exerts a pressure of 14.7 pounds per square inch. A person 5 feet 6 inches in height and measuring 38 inches round the chest has a skin surface of about 15 square feet; the pressure on such a person would be about 31,752 pounds. If it were not for the ease with which air penetrates the body, serious consequences would result from very slight alterations in pressure.

The air at sea level and at various other levels is pressed down by the weight of the air above.

If it were possible for us to actually weigh the air, we should find that at the highest level it would be lightest, because of its not being pressed down or compressed by any air above it.

At each succeeding level, as we descend, it would increase in weight, until we reached the level strata near the earth's

surface, where we should find the heaviest air, on account of its bearing the weight of the volume of air above.

We sometimes talk glibly of things being as light as air; let us ponder for a moment and consider if we are not very wide of the mark when we talk of air being light.

The weight of air at sea level is 14.7 pounds per square inch, and as the earth's surface is nearly 197,000,000 square miles, it is almost beyond our comprehension to realize just what the air surrounding our globe actually amounts to, but runs into many thousands of millions of tons.

The actual weight of course can be found by multiplying 197,000,000 x 640 x 4 x 40 x 30¼ x 9 x 144 x 14.7, the answer to this sum would represent the actual weight of the atmospher in pounds.

The decrease in pressure of the atmosphere is known so accurately, as told by the barometer, that the heights of mountains and the altitude attained by the aeronaut are computed by this law.

Two kinds of barometers are used for this purpose, the mercurial or standard barometer, which consists of a glass tube about 33 inches in length filled with mercury; the tube is sealed at the top end and the lower end is open, being inserted into a cup of mercury; the column of mercury in the tube falls until counterbalanced by the pressure of the atmosphere on the surface of the mercury in the cup. Any variation of atmospheric pressure on the surface of the mercury in the cup forces the mercury in the tube to a greater height if the pressure is increased, and correspondingly lowers the same if decreased.

The Standard or mercurial barometer is marked off in inches and fractions of inches. The average height of the barometer at sea level in Canada is 29.93 inches.

The other kind of barometer used for measuring atmospheric pressure is the "Aneroid" or dry barometer, the word "aneroid" being derived from two Greek words meaning "not wet" or "without moisture."

The aneroid is a very sensitive instrument, consisting of a vacuum chamber and a highly tempered spring. The pressure of the atmosphere actuates the upper surface of the vacuum chamber, which is balanced between the pressure and the spring; the vertical action thus given is recorded by an index finger moving over a dial marked off in inches and fractions of inches, so as to agree with the scale of the Standard barometer.

The writer of this article has used this instrument when with a surveying party, determining the height of mountains.

As a general rule at a height of 920 feet the barometer would fall one inch.

There is, however, a general scale laid down for measuring the height of mountains and for determining the altitude attained by the aviator.

When speaking of weather we refer to the atmospheric conditions prevailing for some particular period of time, but when we talk about climate we mean the sum total of weather conditions.

The sun, however, regulates our weather by its action upon the atmosphere. He gives us Winter and Summer; he gives us light, life and energy; he evaporates the water from the earth, raising the aqueous vapor into the atmosphere, and this vapor cooling is responsible for the formation of clouds, discharging their rain, hail, snow and sleet again to the earth; this evaporation is responsible for the variation of atmospheric pressure and so produces winds and storms.

The atmosphere about us is therefore dependent upon the sun for its variations. When we speak of meteorological conditions we include temperature, evaporation, precipitation, humidity, winds, storms and tempests, hurricanes, cyclones, whirlwinds, fog, rain, snow, dew, clouds, thunder and lightning, heat, cold, barometric pressure; even the rainbow and the Northern lights are included under the heading of meteorological elements, and are all contained in the atmosphere around us.

Air is absolutely essential to every form of animal and vegetable life.

Human life could be sustained without food or drink for several days, but would cease in a very few minutes if totally deprived of air.

It is also of the utmost importance, if healthful conditions of living are to be maintained, that the air in the home and office or place of business, as well as our surroundings be preserved as free from contamination as circumstances and environment will allow. Wherever we may be,

whatever may be our occupation, whether sleeping or waking, we need pure air; we absorb into our system through our lungs and the pores of our skin copious draughts of air to supply us with the required gaseous foods for every part of our bodies, expelling again into the atmosphere the waste products and impurities given off from our bodies. It is, therefore, necessary that we should not be confined in any cramped space if we are to avoid the taking in to our bodies again, the impurities already given off in respiration.

The outdoor life is therefore the ideal mode of living; for it is there that we can depend on a comparatively pure atmosphere.

Modern conditions of life, however, make the outdoor life impossible to the vast majority; we spend the greater portion of our time in the home, the office, the work shop, the factory or in some other enclosed space were the confined air is being continually contaminated or rendered impure with the products of combustion, dust and dirt held in suspension or wafted on the air in passing; decomposition or putrefaction of animal and vegetable matter causing the evolution of impure gases; defective plumbing and drainage systems, damaged flues and chimneys, defective furnaces and fireplaces or stoves, also contributing their quota of foul gases; dust and dirt given off in handling goods and merchandise; various trade impurities; animals and insects assisting in the general contamination of the air; impurities given off by the human being, and in numerous other ways, is the atmosphere surrounding us being continuously polluted.

Were it not for the variations in temperature and other causes disturbing the air and causing frequent changing, the same would soon become so foul that it would be deprived of its life and health giving properties, and would cease to be of any use in the maintenance or sustenance of life.

The causes of aerial pollution having been mentioned it is incumbent to show how it is possible to render innocuous the ill effects arising from such causes.

It is impossible to do this entirely, but much in that direction may be accomplished; many of the causes may of course be removed, such as remedying defects in plumbing, drainage, furnaces, stoves and other fittings; destroying all offensive matter and all unnecessary dirt harboring material; keeping the premises clear of flies and other insects and in many other ways reducing the causes of aerial pollution; but other causes of pollution still and will remain, and the only thing possible to ensure healthful conditions is to ensure such a supply of pure air to replace the vitiated or foul air as will render remaining impurities as innocuous as possible.

This is done by a constant changing of the air and is the first principle of

Ventilation.

Ventilation is governed by two distinct principles, (a) natural ventilation, (b) mechanical ventilation; both principles are dependent on two primary conditions, variation of atmospheric pressure and variation of temperature.

The pressure of the atmosphere has already been explained, but its importance as a factor in ventilation is not generally known; it, however, exerts a wonderful influence on our healthful conditions by forcing the air into every nook and cranny of the home, particularly at the lower parts where the pressure is greatest.

The air being forced into the dwelling under this law drives out the foul air by means of upper doorways, hatches or windows; hence the necessity of keeping doors and windows open as much as possible, always of course in the summertime seeing that such openings are well protected with screens.

Variation of temperature also assists in the general ventilation of the building.

Cold air descends while hot air rises; as a rule the foulest air is nearest the ceiling, hence the necessity of causing the windows to be opened from the top as well as the bottom. The top of the window should be near the ceiling and so allow the foul air to escape from the top of the room.

Owing to the limited time at our disposal it is impossible to deal with the question of ventilation at any great length, but will be content with briefly referring to a simple method of ensuring fair ventilation for the dwelling house.

Ventilation of the Dwelling by Means of Proper Windows.

The question of ventilation has on more than one occasion been considered in the

Bulletin; but at this particular season, it might be opportune to make a few suggestions as to means which can be easily adapted to secure efficient ventilation for the dwelling.

At the recent Health Exhibition several window sashes were on view, showing practically every type of window at present in use in the City of Winnipeg; it was shown that any of these types of windows could be made to admit air into the dwelling, and to act as ventilators.

The most common type of windows in use is the one having the upper sash fixed, and the lower part made to open; and when opened is generally propped up with a stick of wood. This type of window is just a little better than the one with both top and bottom sashes fixed, or the single sash window which is not made to open at all.

The best type of window available for ventilation is the one with both top and bottom sashes made to open. This type of window is made in several different forms. The best form being the box frame sash, with cords and weights running over pulleys for regulating the opening and shutting of the sashes. Others are regulated by means of spring coils.

Both of the above methods necessitate the fitting of box frames for the sashes, but are without a doubt the best forms for all possible usage.

Where the question of economy is an important factor in the case, in place of fitting box sashes, the window opening can be regulated by fitting a spring clip, an ordinary button, an eccentric lever clip or some other device on the sash or on both edges of the sash, in such a manner as to grip the sash frame. Every householder should see that all windows in the house are made to open at the top as well as the bottom, for it is impossible to secure efficient ventilation otherwise under existing conditions.

It might be here mentioned that it is quite a simple matter to loosen the fixed upper sash of the commoner type of window mentioned in this article; a man with a very slight knowledge of carpentry can make the necessary alteration and cause the upper sash to be utilized for ventilation.

To ensure ventilation by means of windows, the sashes should be kept open by day and by night, proper and perfectly fitting screens being used to keep out flies and other insects.

If from any reason, fear is entertained of a direct draught, a weather strip consisting of a piece of wood cut to the requisite length, and 3 or 4 inches in width can be inserted beneath the lower sash, and such sash shut down on this strip; fresh air is thus admitted between the two sashes into the apartment. A perforated strip can also be inserted above the upper sash; this under general conditions will act as an outlet for vitiated air, particularly if situated near the top of the room. The transom over the front door of the house should be made to open, and protected with a screen.

By this means fresh air is admitted to the hall and stairway, and should always be kept open day and night, whenever climate conditions are favorable.

Ventilating Fans.

Ventilating fans in the home are invaluable for disturbing the air and assisting ventilating the apartment.

These fixtures can be obtained in several sizes, and while power for same can be had from the City Light and Power Department at practically a nominal cost, householders will be well advised in adopting this means of domestic ventilation.